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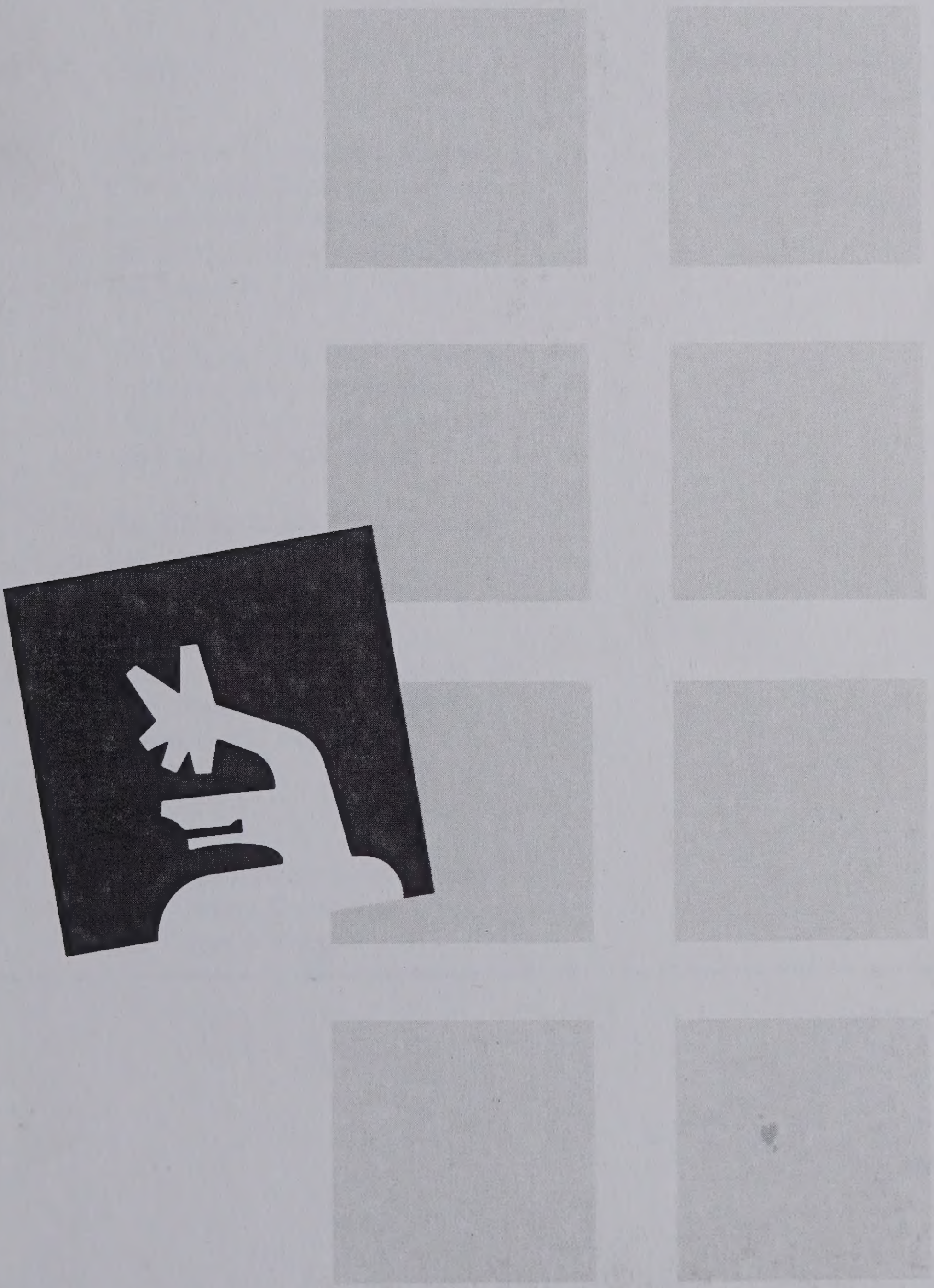
Final Draft Environmental Assessment

Desert Tortoise Translocation



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Final Draft Environmental Assessment

Desert Tortoise Translocation

F.

April 19, 2005

G.

Reference Numbers:
FASI Project #A30602-VE1100

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SECTION 1

A. INTRODUCTION

This environmental assessment evaluates the environmental impacts associated with continuation of Clark County's desert tortoise translocation program on Bureau of Land Management (BLM) lands known as the Large-Scale Translocation Site (LSTS) near Jean, Nevada. This environmental assessment also evaluates the environmental impacts associated with desert tortoise translocation to other sites. And finally, this environmental assessment compares the relative merits of the different alternative sites.

Clark County began translocating desert tortoises to the LSTS in April 1997. In 2002, the BLM requested that Clark County examine other potential translocation sites in addition to the LSTS (2002). This request was made because the number of desert tortoises allowed to be translocated to the LSTS, approved under past environmental assessments, was close to being reached. There were also concerns on the part of BLM about the future viability of the LSTS as a translocation site due to potential future urban and/or commercial development that may be expected in the Jean, Nevada area. These concerns were based upon the *Ivanpah Valley Airport Public Lands Transfer Act* (Public Law 106-362, 2000) and *The Clark County Conservation of Public Lands and Natural Resources Act of 2002* (Public Law 107-282, 2002). Therefore the BLM and Clark County believed that it would be prudent to identify other translocation sites that may be used in addition to or in place of the LSTS.

The County's desert tortoise working group examined a number of potential translocation sites including: the LSTS, the Desert National Wildlife Refuge (DNWR), the Boulder City Conservation Easement (BCCE), desert wildlife management areas (designated by the BLM as areas of critical environmental concern (ACECs)), Bonnie Claire Flat, Yucca Forest, Lake Mead National Recreation Area near the Overton Arm of Lake Mead and overlapping the Overton Wildlife Management Area, public lands near Cactus Springs along U.S. 95 (referred to as Mt. Stirling), public lands along State Route 160 just east of Pahrump, Nevada (referred to as Trout Canyon), and public lands west of I-15 between Jean and Sloan, Nevada (the Jean/Sloan Corridor). Some of these sites have been dropped from further consideration due to reasons documented in Section 2 A: DESCRIPTION OF ALTERNATIVES DROPPED FROM FURTHER CONSIDERATION. Map 1 identifies the sites analyzed in this environmental assessment which include: the Long Term Translocation Site (LSTS), the Desert National Wildlife Refuge, the BCCE, Mt. Stirling, and Trout Canyon.

B. BACKGROUND

The desert tortoise was listed as a federally endangered species under emergency rule in August 1989 (Vol. 54 Federal Register p. 32326) and later listed as threatened in April 1990 (Vol. 55 Federal Register p. 12178). The listing included the Mojave Desert population of desert tortoises west and north of the Colorado River in Utah, Arizona, California, and Nevada. The

U. S Fish and Wildlife Service (USFWS) developed the *Desert Tortoise Recovery Plan* (USFWS 1994)) and designated critical habitat the same year (USFWS 1994). Shortly after the Federal listing, Clark County, Nevada in cooperation with (and under the auspices of the USFWS) the cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite, the Bureau of Land Management, and the Nevada Division of Wildlife, along with environmental groups and public land users, developed the *Short-Term Habitat Conservation Plan* (STHCP) (RECON 1991). This plan initially called for the euthanasia of displaced tortoises that were diseased, injured, or healthy desert tortoises that could not be placed in an adoption program. Shortly thereafter, the Clark County Board of Commissioners passed a resolution on September 17, 1991 directing the County's Implementation and Monitoring Committee to seek other placement efforts in addition to adoption, including translocation and research, to preclude the necessity of euthanasia of healthy desert tortoises. This resulted in the accumulation of hundreds of desert tortoises at the BLM's Desert Tortoise Conservation Center (DTCC). The DTCC was originally constructed in 1990 under a suit settlement agreement between the U. S. Justice Department and the Southern Nevada Homebuilders Association, City of Las Vegas, and State of Nevada to provide a facility to conduct desert tortoise research and hold displaced desert tortoises. The County's HCP program expended tens of thousands of dollars to construct additional facilities at the DTCC to hold and care for desert tortoises.

In August 1995, Clark County developed the *Clark County Desert Conservation Plan (CCDCP)* (RECON 1995) which incorporated many elements from the STHCP while addressing other conservation issues, including the disposition of displaced desert tortoises. Appendix D of the plan analyzed the relative costs associated with holding desert tortoises indefinitely or implementing a translocation program. The analysis estimated that it would cost approximately $10,000,000 over the 30-year life of the plan to hold and care for an expected 21,000 desert tortoises that might be recovered from development activities or turned in by pet owners.

In 1996, Clark County developed an environmental assessment for a translocation and research program on BLM lands (known as LSTS) near Jean, Nevada (RECON 1996). The area included approximately 26,200 acres bordered on the east by I-15, the north by State Route 161, the west by the Spring Mountains, and the south by a proposed fence a few miles north of the Nevada/California state line. The EA covered the translocation of up to 1200 desert tortoises to the site along with research to evaluate the effectiveness of the translocation effort. The original environmental assessment also covered the construction of approximately 7.2 miles of new tortoise fence and installation of seven cattle guards, and the retrofitting of approximately 10 miles of existing fence along the I-15 right-of-way.

A second EA was prepared in 2003 (Aztec Environmental Consulting 2003) which allowed an additional 3,400 desert tortoises (hatchlings do not count against the number) to be released in the LSTS over a 36-month period (March 2003 – March 2007). Though this environmental assessment is current, it will be superceded by this document if approved.

The first translocation effort occurred in April 1997 when 60 desert tortoise hatchlings were relocated to the site. The most recent translocation effort occurred in October 2004 when 420 tortoises, including 221 hatchlings, were released into the LSTS for a total of 5,126 desert

tortoises released into the LSTS since translocation began (SNEI, 2004). The size/age and gender of tortoises translocated to the LSTS is given in Table 1.

Table 1: Translocation of desert tortoises to the LSTS by month, year, size class, and sex.

	Adult ≥ 208 MCL			Subadults 180 – 207 MCL			Juveniles 100 – 179 MCL	Hatchlings ≤ 99 MCL	Total
	F	M	Unk.	F	M	Unk.			
April 1997	-	-	-	-	-	-	-	60	60
May 1997	6	35	-	5	5	7	51	131	240
Oct. 1997	32	35	-	8	9	2	20	49	155
Nov. 1997	14	19	-	4	4	2	23	84	150
Jan. 1998	21	52	4	8	7	4	37	136	269
Feb. 1998	6	-	-	1	1	1	8	-	17
April 1998	17	90	1	7	18	11	31	66	241
May 1998	1	4	-	-	-	-	1	3	9
Oct. 1998	42	54	-	13	12	2	60	75	258
Nov. 1998	2	-	-	3	-	-	18	19	42
Jan. 1999	31	61	-	5	6	1	59	122	285
Feb. 1999	1	-	-	-	-	-	-	-	1
March 1999	-	-	-	-	-	-	1	144	145
April 1999	28	53	-	7	4	7	51	1	151
Oct. 2000	38	39	2	6	6	6	27	41	165
April 2001	53	176	2	10	29	15	175	152	612
Sept. 2001	24	18	-	2	2	1	30	42	119
Oct. 2001	71	116	2	13	14	25	125	283	649
April 2002	38	25	1	4	2	3	16	17	106
April 2003	47	83	2	-	10	8	81	122	353
Oct. 2003	4	124	5	5	20	30	157	242	587
April 2004	18	34	1	5	1	-	10	23	92
Oct. 2004	31	89	1	4	9	15	50	221	420
Total	**525**	**1107**	**21**	**110**	**159**	**140**	**1031**	**2033**	**5,126**

In 1997 a research plan was prepared to develop translocation techniques and test the efficacy of translocating desert tortoises. Field (1999) translocated 28 desert tortoises (13 adult females, 13 adult males, and two juveniles) in April and May of that year to the LSTS. The study focused on comparison of desert tortoises that were provided readily available water prior to their release versus tortoises that were not provided water and whether that had an effect on translocation success as reflected in body mass, carapace length, movement, and survival. 1997 was a drought year and all tortoise demonstrated loss of body mass the first year but regained body mass by 1998 after ample summer and fall rains. Tortoises that received water prior to their release showed greater increase in carapace length by the end of 1998. Movement and survival of translocated tortoises did not seem to be affected by the water treatments. Additional translocation studies conducted at the LSTS (Field, et al 2000; Nussear, et al 2000; Tracy, et al 2000) demonstrated that translocated desert tortoises displayed an increase in their movements and distance traveled during the first year, but by the second year displayed very similar movement patterns to resident tortoises. For the LSTS, mortality rates were no different for translocated tortoises than resident tortoises and by the second year the translocated tortoises appeared to do as well as resident tortoises as measured by survivorship, reproduction,

movement distances, home ranges, social interactions, burrow selection, and habitat selection (Field, et al 2000). Field compared the success of translocation of pet tortoises (13 adults and 2 juveniles) and wild tortoises (17 adult, 8 juvenile) to the LSTS. Two of the eight pet juvenile tortoises died the first year. However, there were no differences in mortality of adult tortoises or other parameters measured such as movement and body mass between pet and wild tortoises. In order to allow translocation to continue, the USFWS required a research study that would evaluate the effects of density on tortoise reproduction, health and mortality. Consequently, a tortoise density study was implemented at the DTCC in 2001. The study compared different tortoise densities of animals of 180 mm and greater at densities of 150 animals/km^2 to 1500 animals/km^2. In the parameters measured - animal condition, occurrence of URTD, reproductive output, and mortality – there were no significant differences between the control group and a densities less than 850 tortoises/sq. km^2, indicating that habitats in southern Nevada may support densities higher than currently occur in the wild in southern Nevada (Saethre et al.2003). However, as the study only analyzed two years of data, it may be pre-mature to assume such densities are feasible in the wild over the long-term. The U.S. Fish and Wildlife Service indicated that 152 tortoises/sq.km^2, or 400 tortoises/mi.^{2}, may be an appropriate density to manage for at translocation sites (Burroughs, personal communications 2004[1]). However, the actual density to be managed for in translocation will be based upon monitoring studies which will monitor the health of the population in question.

Since the implementation of the County's desert tortoise translocation program in 1997, 12,880 desert tortoises have been collected and processed at the DTCC. Sick or injured animals were euthanized and healthy animals were either given out to adoption, research programs, or translocated to the LSTS. Approximately 1200 tortoises are collected annually.

Desert tortoises are currently translocated in April and October of each year when ambient temperatures are such that cover (i.e. burrows) for protection from extreme temperatures is not necessary (Hewitt, personal communications 2004[2]). When desert tortoises enter the DTCC, they are quarantined until test results for Upper Respiratory Tract Disease (URTD) come back. Animals that test negative for URTD are then placed in outside pens with other tortoises until they are translocated. Each tortoise receives a small white numbered tag glued on the tortoise's carapace. The animal also has the same number notched on the scutes. The animals are individually boxed and transported to the translocation site where they are released individually. Due to the time of year, the animals are simply placed under a bush, or if a burrow is present, placed in the burrow.

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[1] Michael Burroughs, wildlife biologists, USFWS Southern Nevada Field Office, Las Vegas, Nevada

[2] Ryan Hewitt, biologist with Southern Nevada Environmental, Inc. responsible for translocating tortoises from the DTCC to the LSTS.

C. PURPOSE AND NEED

The existing environmental assessment for desert tortoise translocation expires in 2007 and is limited to the translocation of an additional 3,400 desert tortoises (not including hatchlings) beyond that already translocated as of the end of 2002. 1,452 tortoises (including 608 hatchlings) have been translocated to the LSTS under the existing environmental assessment. (McDermott, personal communications 2004[3]). This environmental assessment is necessary to continue the County's desert tortoise translocation program beyond the limits established under the existing environmental assessment. This environmental assessment will also provide the basis for the selection of one or more sites for future translocation in addition to the LSTS. As long as construction activity continues to displace desert tortoises and thousands of desert tortoises are kept as pets, translocation is the only viable alternative to humanely dispose of healthy desert tortoises that are displaced by construction activity or turned in by pet owners. The number of tortoises turned into the County's pick up service has been in excess of that needed to meet research and adoption demand. Due to public sentiment, euthanasia of healthy desert tortoises is not an option at this time, and the costs associated with maintaining them at the DTCC indefinitely is prohibitively expensive.

The purpose and need for this document is to address the environmental impacts of translocation of desert tortoises to one or more sites in southern Nevada and to determine which site or sites should be used for translocation. This includes analyzing impacts associated with infrastructure construction necessary to implement translocation at a particular location, and monitoring and research efforts that may be associated with the translocation program.

D. CONFORMANCE WITH APPLICABLE LAND USE PLANS

The translocation alternatives evaluated in this document are in conformance with the Record of Decision for the BLM's *Las Vegas Resource Management Plan* (RMP) (BLM 1998a). Though not specifically addressed in the RMP, the alternatives identified in this document are not in conflict or inconsistent with the plan. The translocation alternatives are also consistent with the *Desert Tortoise Recovery Plan*, Clark County's *Desert Conservation Plan, Multiple Species Habitat Conservation Plan (MSHCP),* and *Conservation Easement Grant* (Clark County 1995) for the Boulder City Conservation Easement.

The Desert National Wildlife Refuge is in the process of developing a "comprehensive conservation plan" *(CCP)* which will outline management goals, objectives, and strategies for the refuge. This plan is anticipated to be available for public comment in 2005. Prior to the selection of the refuge as a desert tortoise translocation site, the refuge must make a determination that translocation of tortoises to the refuge is consistent with the purpose of the refuge's establishment.

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[3] Michelle McDermott, biologist with Southern Nevada Environmental, Inc. responsible for tracking incoming and outgoing tortoises at the DTCC.

E. LEAD AGENCIES

Because this action is a cooperative effort between Clark County, the U.S. Fish and Wildlife Service, and the Bureau of Land Management, each agency is a co-lead in the development of this environmental assessment. The U.S. Fish and Wildlife Service has two responsibilities – one as the authority agency under the Endangered Species Act of 1973, as amended, through the U.S. Fish and Wildlife Service's Southern Nevada Field Office and the other as an affected land management agency through the U.S. Fish and Wildlife Service's Desert National Wildlife Refuge. The Desert National Wildlife Refuge is responsible for determining whether the Desert National Wildlife Refuge may be used for desert tortoise translocation. Clark County as the Section 10 HCP permit holder is the implementing agency and funding source for desert tortoise translocation. Both the Service's Southern Nevada Field Office and Clark County must concur with the implementation of desert tortoise translocation on any of the lands identified in this environmental assessment. Both the Desert National Wildlife Refuge and the Bureau of Land Management must concur with desert tortoise translocation on their respective lands.

F. AUTHORITIES

The U.S. Fish and Wildlife Service has authority to participate in this action through the *Endangered Species Act of 1973*, as amended, *the National Wildlife Refuge System Administration Act of 1966* as amended by the *National Wildlife Refuge System Improvement Act of 1997*, the *Refuge Recreation Act of 1962*, and the *National Environmental Protection Act of 1969*. The Bureau of Land Management has authority to participate in this action through the *Federal Land Management Policy Act of 1976* and the *National Environmental Protection Act of 1969*. Clark County has authority to participate in this action as a permit holder of a Sec. 10 permit from the U.S. Fish and Wildlife Service through the *Endangered Species Act of 1973*, as amended.

G. DECISIONS TO BE MADE

There are five sites under consideration for use for desert tortoise translocation. These include: the Large-Scale Translocation Site (LSTS), Trout Canyon, and Mt. Stirling sites under the management of the Bureau of Land Management and BLM lands immediately adjacent to the BCCE; the Desert National Wildlife Refuge under the management of the U.S. Fish and Wildlife Service; and the Boulder City Conservation Easement managed by Clark County through a conservation easement with Boulder City and under the auspices of the U.S. Fish and Wildlife Service. Decisions to be derived from this environmental assessment include the following:

- Would the adoption of any or all of the considered alternatives (including minimization and mitigation measures) have significant affect on the quality of the human environment thus requiring the preparation of an Environmental Impact Statement (EIS)?

- Are the sites (with the exception of the LSTS which was previously determined to be suitable) analyzed suitable for desert tortoise translocation?

- Which, if any, of the proposed action and alternatives analyzed in the environmental assessment is selected for desert tortoise translocation?

- Of the site(s) selected in this process, are there any additional requirements that must be met before their acceptance as desert tortoise translocation sites?

SECTION 2

A. DESCRIPTION OF ALTERNATIVE ACTIONS DROPPED FROM FURTHER CONSIDERATION

The following alternatives were initially considered by Clark County's desert tortoise working group and were withdrawn from further consideration for the reasons stated below.

1. No Action Alternative

The adoption of the "no action alternative" would result in the discontinuance of Clark County's desert tortoise translocation program sometime over the next two years – depending upon the number of tortoises translocated to the existing site known as the LSTS near Jean, Nevada. This would require Clark County to end their desert tortoise pickup service and hold desert tortoises at the DTCC indefinitely, or euthanize healthy desert tortoises. The last option was disapproved by the Clark County Board of County Commissioners in September 1991 due to public opposition. Holding desert tortoises indefinitely at the DTCC would be prohibitively expensive (estimated to cost well over $10,000,000). Ending Clark County's pickup service could result in the public turning their unwanted pet desert tortoises into the dessert thus increasing the likelihood of spreading disease into wild desert tortoise populations. The adoption of this alternative would also be in conflict with the County's Sec. 10 HCP permit issued by the U.S. Fish and Wildlife Service. Therefore this alternative will not be further analyzed or considered in this environmental assessment.

2. The Euthanasia of Displaced Desert Tortoises:

Approximately 1,200 desert tortoises are turned into the County's "pick up service" annually. Some of these tortoises are displaced from construction activities while most are escaped pets or turned in by their owners. The County's *Short-Term Habitat Conservation Plan* allowed for the euthanasia of all displaced tortoises that were not adopted out. After a strong public outcry in opposition to this policy, the Board of County Commissioners passed a resolution on September 17, 1991 directing the County's Implementation and Monitoring Committee to seek other placement efforts in addition to adoption, including translocation and research, to preclude the necessity of the euthanasia of healthy desert tortoises. There is no reason to believe that public sentiment would be any different today than then. Any change in this policy would require approval by the Board of County Commissioners and an amendment to the County's MSHCP Sec. 10 permit. Therefore, the euthanasia of desert tortoises is not presented as a viable alternative in this document.

3. Discontinue the County's Desert Tortoise Pick Up Service:

The County's tortoise pick up service was implemented to discourage the public from dropping off tortoises in the desert and to control the disposition of displaced tortoises or those found wandering in developed areas. The release of sick animals or animals of unknown genetic origin may have negative impacts to desert tortoise populations in the wild, especially if such animals are released into a recovery area. The pick up service is required in the County's Sec. 10 MSHCP permit. The adoption of this alternative would require a change in the County's permit. Therefore, for the reasons stated, this alternative will not be further analyzed in this environmental assessment.

4. Translocation of Desert Tortoises to Desert Wildlife Management Areas

There are four desert tortoise desert wildlife management areas in Clark County comprising 743,209 acres of public lands under the jurisdiction of the Bureau of Land Management. These lands were designated as ACECs (areas of critical environmental concern) under the BLM's *Las Vegas Resource Management* for the purpose of meeting the U.S. Fish and Wildlife Service's *Desert Tortoise Recovery Plan* recovery objectives. These sites were identified as integral components of two different recovery units, the Eastern Mojave Recovery Unit and the Northeastern Mojave Recovery Unit. Each recovery unit was identified with those desert tortoise populations that "are considered distinct in terms of genetics, habitat use, or environmental adaptation." An argument was made by some that translocation could have a positive effect on recovery in that it would be a good tool to supplement these populations and thus assist in meeting recovery objectives. However, others expressed concern that translocation could introduce diseases into the local population, change the genetics of locally adapted populations, and artificially increase tortoise numbers that do not reflect responses of native populations to environmental conditions which has implications for recovery. Though there are tests for determining exposure to bacteria that cause Upper Respiratory Tract Disease, there are viruses that are known to cause disease and there may very well be other diseases unknown at this time, especially since many of the potential translocated tortoises are former pets that may have been exposed to other species of reptiles. Another concern expressed was what effect placing an animal of unknown origin would have on the genetic integrity of the local population, since most of the potential pool of tortoises for translocation are former pets and their origin is unknown. Translocating such animals to an ACEC could have negative impacts on the local population's genetic distinction. Others argue that lumping together animals of different genetic backgrounds could have a positive impact since a population with a wider array of genetic variability might better withstand catastrophic events. However, mixing animals of different genetic background would be contrary to the objectives of the current recovery plan. The U.S. Fish and Wildlife Service, the Bureau of Land Management, and the Nevada Department of Wildlife (all agencies having jurisdiction over this issue) are opposed to the translocation of desert tortoises to the ACECs at this time and for the reasons mentioned above would

not approve this option (Burroughs, Murphy, Hardenbrook, personal communications 2004[4]).

If in the future the disease issues are resolved and recovery objectives modified regarding genetic distinction, this alternative may be revisited. It has been suggested that supplementation of recovery populations could be achieved through the use of hatchlings from captive healthy adult animals of known genetic origin. This option is separate from translocation as it involves a captive breeding program distinct and separate from translocation and would be considered under its own merits outside the scope of this document. For the reasons stated above, this alternative will not be further analyzed in this document.

5. Translocation of Desert Tortoise to Widely Scattered Habitats Outside ACECs

An alternative to the translocation of desert tortoises to one or more sites is to disperse the translocation of tortoises throughout their range within southern Nevada with the exception of ACECs. This would allow for a lower number of tortoises to be placed at any given location and reduce the potential for creating greater conflict between resident desert tortoises and translocated tortoises. The negative side is that many potential areas are relatively close to ACECs and subsequently there could be a higher potential for translocated tortoises to move into an ACEC. There are only a few sites outside those areas currently being considered for translocation that are of sufficient distance or isolated from ACECs in which this alternative may be implemented. This includes California Wash (east of I-15 between Apex and the Moapa Indian Reservation), the Amargosa desert (along U.S. 95 south of Beatty, Nevada), and the Jean Lake area (east of I-15 between Jean, Nevada and Las Vegas). The Amargosa desert is currently an area being considered by the USFWS's desert tortoise recovery team as a potential site for managing a "distinct" genetic tortoise population. Translocation of tortoises from other locations may have negative affects on recovery objectives. There would be a mixing of genetically different tortoises on a large scale, along with the potential for introduction of disease. The USFWS has indicated that the agency is unprepared to approve this alternative, and it is therefore dropped from further analysis.

6. Bonnie Claire Flat:

Bonnie Claire Flat is administered by the BLM Battle Mountain Field Office through its Tonapah Field Station and located approximately 65 miles north of Beatty, Nevada (170 miles from Las Vegas). The site is in a basin with a creosote scrub plant community typical of desert tortoise habitat. However, the elevation at the valley floor is at 1,200 meters with only 12,000 acres of potential habitat between 1,200 and 1,250 meters, an elevation considered to be the upper limit for higher density tortoise populations. The

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[4] Michael Burroughs, wildlife biologist, USFWS, Southern Nevada Field Office, Las Vegas, Nevada. Kristen Murphy, wildlife biologist, BLM, Las Vegas Field Office, Las Vegas, Nevada, and Brad Hardenbrook, habitat specialist, Nevada Department of Wildlife, Las Vegas, Nevada.

site also lies within an active livestock grazing allotment and herd management area. In the late 1990s personnel expended approximately 200 hours inventorying the valley to determine the presence of desert tortoises. As this valley contains an isolated creosote scrub community, the BLM was interested in determining if there might be a desert tortoise population isolated from tortoise populations further south (Slone, personal communications 2004[5]). They did not find any tortoises or tortoise sign.

Clark County's translocation working group reviewed this alternative and rejected it from further consideration for the reasons stated below. This alternative was also rejected by consensus in a meeting with the USFWS, BLM, NDOW, NDOT (Nevada Department of Transportation), USFS (U.S. Forest Service), Implementation and Monitoring Committee representatives for the Searchlight Town Board and OHV (off highway vehicle) community on May 18, 2004.

Though the isolation and elevation of this site may make for a study for determining if a viable desert tortoise population could be established here, there are a number of drawbacks to consideration of the site for translocation. First, there are only 12,000 acres of potential tortoise habitat, which means that even if tortoises could survive here, the usefulness of the site for translocation would be limited. Second, there is considerable doubt that tortoises could survive here over the long term. The distance from Las Vegas would increase the transportation costs of a translocation effort there, and more importantly, would make it less convenient for implementing the translocation program including any follow-up monitoring or research. And last, the occurrence of livestock grazing and wild burro use could have a negative impact on the quality of the habitat. It is anticipated that the livestock operator would be opposed to adding a threatened species to the allotment, even if declared an experimental non-essential population. There are other sites closer to Las Vegas, with known suitable habitat and no potential conflict with livestock grazing. Therefore, this site will not be further analyzed in this document.

7. Yucca Forest:

Yucca Forest is a 6,000 acre valley bordered by the Sheep Range and Fossil Ridge within the Desert National Wildlife Refuge. Most of this valley is between 1,250 and 1,550 meters in elevation. Though tortoise-sign has been observed (Bury, R.B. et al.1994), this area is considered to be marginal desert tortoise habitat due to its high elevation. Though there are no conflicts with other uses, the small size and marginality of habitat make this site questionable for translocation. Clark County's translocation working group reviewed this alternative and rejected it for further consideration for these reasons. This alternative was also rejected by consensus in the meeting described above on May 18, 2004.

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[5] Sidney Slone, former wildlife biologist with BLM Las Vegas Field Office, Las Vegas, Nevada

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

8. Lake Mead:

The Lake Mead site is located on a peninsula on the south end of Lower Mormon Mesa within the Lake Mead National Recreation Area and Nevada Department of Wildlife's Overton Wildlife Management Area. Though the site is suitable desert tortoise habitat and presently has tortoises, soils are very sandy with sparse vegetation, making this site marginal for translocation. The site encompasses only about 2,400 acres, further reducing the significance of this site for translocation. For these reasons, the County's desert tortoise translocation working group recommended that this site not be used for translocation. The participants in the May 18, 2004 meeting listed above concurred with that recommendation. Therefore, this site will not be further analyzed in this document.

9. Jean/Sloan Corridor:

At the time of the selection of the LSTS as a desert tortoise translocation site, members of the County's Implementation and Monitoring Committee discussed using public lands immediately west of I-15 between Jean and Sloan, Nevada as a future translocation site if and when the LSTS reached carrying capacity. However, due to the expected continuation of urban expansion southward from Las Vegas Valley along the I-15 corridor, members of the County's desert tortoise working group expressed concerns about using this area for translocation (Medica, personal communications 2004[6]). Therefore, this site has been dropped from further consideration.

B. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The proposed action is to continue implementation of the County's desert tortoise translocation program at the LSTS and allow activities as may be needed or desired in association with the translocation program, including tortoise population monitoring (including disease), research, and training exercises for biological monitors. The latter may involve up to 50 people, 10-20 vehicles, installation of line transect markers, and placement of Styrofoam tortoises (model tortoises used for training personnel in spotting tortoises). Under the proposed action, the County would continue their pick-up service, operate the holding facility at the DTCC, and translocate healthy desert tortoises to the LSTS. In addition to the LSTS, the County proposes to use one or more of the alternative sites listed below (see Map 1 for site locations). The translocation program could extend for 30 years or more and include the translocation of up to 30,000 tortoises. It is believed that a density of several hundred tortoises per square mile is possible at any given site without deleterious affects. However, the actual number of desert tortoises translocated to any particular site will be dependent upon the results of site specific monitoring studies.

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[6] Phil Medica, ecologist, formally with the USFWS Southern Nevada Field Office and currently with the USGS, Las Vegas, Nevada.

Trout Canyon
Desert National Wildlife Refuge (DNWR)
Boulder City Conservation Easement (BCCE)
Mt. Stirling

The translocation effort was originally initiated to: 1) re-locate desert tortoises displaced as the result of construction and development projects in Clark County, Nevada, 2) provide a means to relocate healthy pet desert tortoises turned in by Clark County residents so as to discourage residents from turning their potentially diseased tortoises out into the wild, 3) study the techniques and viability of translocating desert tortoises to the wild, and 4) to accommodate the large number of displaced desert tortoises brought in through the County's pick up service. Item 3 was successfully completed and demonstrated that desert tortoises (even former pets) could be successfully translocated to the wild (Field 1999), at least on a short-term duration.

The proposed action includes the construction of fences, or retrofitting existing highway fences, along highways as necessary to reduce potential mortality from traffic. The extent of highway fence construction is dependent upon the individual sites selected. All fencing proposed along highways will be constructed within the highway right-of-way. The fence design proposed to be used include a 2" vertical by 1" horizontal welded wire fence buried at least six inches deep and extend at least 18 inches above ground. Where the mesh wire can not be buried due to rock outcrop or where existing fences are retrofitted, the mesh will be bent over and laid flat on the ground surface and covered with rocks or soil Steel t-posts will be installed every 10 to 16 feet and a smooth galvanized wire will be stretched between the posts and used for attaching the mesh wire. Another one or two strands of smooth galvanized wire will be placed 20 inches above the mesh wire. This is to provide enough visual contrast to help prevent people from driving off-road vehicles through the fence. In corridors used by desert bighorn sheep, the fence design will be modified to meet NDOW requirements as described in a memorandum from NDOW to the U.S. Fish and Wildlife Service on February 11, 2005. These fence designs may be modified to meet wildlife or other needs as may be agreed to between the land management agencies, the USFWS, and NDOW. New fencing is proposed outside of highway right-of-ways at all four alternative sites (see Table 2 below) to help keep desert tortoises within the confines of the translocation area. In areas where new fence construction may create conflicts with existing uses (i.e. wild horse and burro use areas), fence design may be modified, or the fences not constructed at all. Even with fencing it is expected that some translocated tortoises may move outside the translocation site. Given the location of the various alternative sites, this is not expected to present a problem for desert tortoise recovery or to resident tortoises in habitats into which the translocated animals may move. All new fence construction will only be allowed during the period between August 30 and February 1 of each year to avoid "take" of migratory birds or their nests.

Table 2: Landowner Status and Potential Fencing Needs for the LSTS and Each Alternative Site

Site	No. of Acres by Landowner Status	New Fence Construction	Cattle-guards Needed	Retrofitting Existing Fences	Remarks
LSTS	27,098 ac. BLM 104 ac. Pvt. (mining patents)	1.7 miles (to fence out disposal area in northeast corner)	None	NA	This fence is only necessary if and when land in the northeast corner of the site is disposed of.
Trout Canyon	27,602 ac. BLM 335 ac. Pvt	15 miles of new fence along S.R. 160 5 miles of new fence cross country at both ends of site	Six	NA	The 3.25 miles of cross country fence may be modified in design or length or dropped altogether due to herd management area
DNWR	51,018 ac. USFWS	20 miles of new fence cross country along the Desert National Wildlife Refuge boundary (does not include the 20 miles proposed to be fenced by the Refuge)	unknown	NA	The proposed fences will be constructed along the boundary of the refuge. The FWS has requested through SNPLMA funds to fence approximately 20 miles of the refuge boundary on the south side.
BCCE	33,361 ac. Boulder City Conservation Easement 7,859 ac. BLM 31 ac. Pvt	8.25 miles cross country along north boundary 0.5 miles cross country on BLM at south boundary	Four	NA	It is anticipated that the north boundary may be fenced (including 4 cattle guards) as part of the Hoover Dam bypass mitigation. The private land is a mining patent on BLM land portion
Mt. Stirling	40,671 ac. BLM	3 miles of new fence cross country from gravel pit to ridge	Four	21 miles of retrofitting existing highway fence along U.S. 95.	The cross country fence may be modified in design or length or dropped altogether due to herd management area

1. Large - Scale Translocation Site (LSTS)

The LSTS is located near Jean, Nevada and is bounded by SR-161 on the north, Interstate Highway 15 on the east, the 1,250-meter elevation in Spring Mountains on the west, and a tortoise-proof fence approximately three miles north of the California state line to the south (see Map 2). The LSTS encompasses approximately 27,098 acres of public lands managed by the BLM Las Vegas Field Office. There are 104 acres of mineral patented land in the Spring Mountains along the west boundary. Fencing on the north, south, and east sides have already been constructed under the original translocation program. Approximately 1.7 miles of new fencing may be needed if lands currently open for disposal in the extreme northeast corner of the LSTS are ultimately disposed of.

2. Trout Canyon

This site encompasses approximately 27,602 acres of public lands managed by the BLM within Clark County, Nevada. The site is located near Pahrump, Nevada, bordered on the south by State Route 160, and extends north/northeast to the 1,250- meter elevation line on BLM lands and to the U.S. Forest Service boundary at T. 21 S., R. 56 E., Secs. 20,28, 33 and 34 (See Map 3). The western boundary runs North-South along the Clark and Nye

County line and the eastern boundary follows the west bank of Lovell Wash. There is 335 acres of private land included in the boundary. The BLM received a proposal for a road right of way for access to part of these private lands for development purposes. Approximately 20 miles of new fence construction may be necessary to use this site for desert tortoise translocation. Fifteen of these miles are along S.R. 160. The remaining five miles cross public land between S.R. 160 and the 1250 meter elevation line. This is to help keep translocated tortoises with the translocation site. At least six cattle guards would be needed to provide access onto public lands from S.R. 160.

3. Desert National Wildlife Refuge (DNWR)

This site is located directly north of Las Vegas, Nevada within the Desert National Wildlife Refuge managed by the U.S. Fish and Wildlife Service (see Map 4). The site encompasses approximately 51,018 acres and extends to the north and west to the 1,250-meter elevation line in the Sheep and Las Vegas mountain ranges. The far north boundary is along the south boundaries of T. 17 S., R. 59 E., Secs. 17 and 18. Approximately 40 miles of new fence construction along the refuge boundary may be needed to keep translocated desert tortoises within the site. The U.S. Fish and Wildlife Service received $600,000.00 through the *Southern Nevada Public Land Management Act* (Public Law 105-263, 1998) to fence approximately 20 miles of the refuge's southern boundary. (Part of this funding is to be used to fence the Moapa Refuge). This will help to control access along the urban interface with Las Vegas. The fence could serve to meet desert tortoise translocation needs, depending on the design. Due to poor desert tortoise habitat (based upon unsuitable soils – see Sec. 5 Tortoise Habitat – Soils and Ecological Sites) along the western boundary of the refuge, it may not be necessary to fence the western boundary. Approximately 42,455 acres of recommended wilderness overlaps the translocation site area.

4. Boulder City Conservation Easement (BCCE)

This site includes approximately 38,360 acres of Boulder City Conservation Easement lands and approximately 7,800 acres of public lands managed by the BLM Las Vegas Field Office (see Map 5). The Boulder City Conservation Easement land is owned by Boulder City but managed under the 50-year *Conservation Easement Grant* (1995) established with Clark County in 1995 for the conservation of desert tortoises and other desert wildlife. Clark County intends to develop a management plan for the easement within the next few years. The establishment of the easement was part of the County's mitigation measures established under their Short-Term Habitat Conservation Plan. The site is bordered on the west by U.S. 95, which was recently fenced by NDOT with tortoise proof fencing, and on the east by the Lake Mead National Recreation Area (unfenced) including the Eldorado Wilderness Area. The north boundary is unfenced and follows the easement boundary which borders a Department of Energy withdrawal. The south is bounded in part by Nelson Road (S.R. 165) - also fenced by NDOT. The remainder of the south boundary is through BLM lands along the south boundary of T. 25

S., R. 64 E., Secs. 21 - 24 to the Lake Mead National Recreation Area boundary. Part of the Eldorado Wilderness Area overlaps 4599 acres of the BLM lands that are part of the BCCE translocation site. Most of the Lake Mead National Recreation Area that forms the eastern boundary of the translocation site is also part of the Eldorado Wilderness Area.

All of the easement lands and 6,520 acres of the BLM lands within this site overlap designated desert tortoise Critical Habitat. Critical Habitat is defined as, *"(1) the specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act* (the Endangered Species Act), *on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographical area .....essential for the conservation of the species."* The conditions and management prescriptions of the *Conservation Easement Grant* are consistent with the Critical Habitat designation. The grant allows for the translocation of desert tortoises pursuant to a research program that is authorized by the USFWS. Critical Habitat designation does not preclude translocation.

Approximately 8.25 miles of new fence and four cattle guards may be needed along the north boundary. It is anticipated that this fence may be constructed as mitigation to the Boulder City bypass route which is anticipated to be completed within the next few years. Another fence is needed to connect the S.R. 165 fence to a ridge in T. 25 S., R. 64 E., S ½ Sec. 21. This fence is approximately ½ mile long and will help to stop translocated tortoises from going around the existing highway fence.

5. Mt. Stirling

The Mt. Stirling site is located along the south side of U.S. 95 from one mile west of Cactus Springs, Nevada to Point of Rocks, approximately five miles west of the Mercury, Nevada exit at U.S. 95 (see Map 6). The site encompasses approximately 40,672 acres of public lands of which 20,258 acres are within Clark County and 20,414 acres fall within Nye County. Approximately 21 miles of highway fence retrofitting will be necessary along U.S. 95. Another three miles of new fence construction may be necessary from the southwest corner of the fenced gravel pit adjacent to U.S. 95 to the 1,250 meter elevation in Sec. 36 where it will tie into a ridge. Up to four cattle guards may be needed to replace gates (which tend to be left open). Another short fence may be necessary at the junction of Point-of-Rocks and U.S. 95.

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SECTION 3

A. ENVIRONMENTAL ELEMENTS

Tables 3 – 7 identify elements of the human environment that may or may not be affected by the proposed action and alternative sites under consideration. Those elements affected or possibly affected are noted as "Yes" in the Affected column, those elements not affected or not located in the alternative site are noted as "No".

Table 3: LSTS (Large - Scale Translocation Study Site)

Critical Or Other Element	Affected	Critical Or Other Element	Affected
Air Quality	Yes	Threatened & Endangered Species	Yes
Area of Critical Environmental Concern (ACEC)	No	Wastes, Hazard/Solid	No
Cultural Resources	Yes	Water Quality	No
Farmlands, Prime/Unique	No	Wetlands/Riparian Zones	No
Floodplains	No	Wild and Scenic Rivers	No
Environmental Justice	No	Noxious Weeds	No
Notive American Religious Concerns	No	Wilderness	No
Special Status Species (plants and animals)	Yes	Visual Resources	Yes
Soils	Yes	Vegetation	Yes
Migratory Birds	No	Wildlife (other than tortoises)	Yes
Wild Horse & Burros	No	Livestock Grazing	No
RecreatioNol Activities	No	Mining Activities	No
Land and Realty Activities	No		

Table 4: Trout Canyon

Critical Or Other Element	Affected	Critical Or Other Element	Affected
Air Quality	Yes	Threatened & Endangered Species	Yes
Area of Critical Environmental Concern (ACEC)	No	Wastes, Hazard/Solid	No
Cultural Resources	Yes	Water Quality	No
Farmlands, Prime/Unique	No	Wetlands/Riparian Zones	No
Floodplains	No	Wild and Scenic Rivers	No
Environmental Justice	No	Noxious Weeds	No

Notive American Religious Concerns	No	Wilderness	No
Special Status Species (plants and animals)	Yes	Visual Resources	Yes
Soils	Yes	Vegetation	Yes
Migratory Birds	No	Wildlife (other than tortoises)	Yes
Wild Horse & Burros	Yes	Livestock Grazing	No
RecreatioNol Activities	No	Mining Activities	No
Land and Realty Activities	No		

Table 5: Desert National Wildlife Refuge

Critical Or Other Element	Affected	Critical Or Other Element	Affected
Air Quality	Yes	Threatened & Endangered Species	Yes
Area of Critical Environmental Concern (ACEC)	No	Wastes, Hazard/Solid	No
Cultural Resources	Yes	Water Quality	No
Farmlands, Prime/Unique	No	Wetlands/Riparian Zones	No
Floodplains	No	Wild and Scenic Rivers	No
Environmental Justice	No	Noxious Weeds	No
Notive American Religious Concerns	No	Wilderness	No
Special Status Species (plants and animals)	Yes	Visual Resources	Yes
Soils	Yes	Vegetation	Yes
Migratory Birds	No	Wildlife (other than tortoises)	Yes
Wild Horse & Burros	No	Livestock Grazing	No
RecreatioNol Activities (OHV)	No	Mining Activities	No
Land and Realty Activities	No		

Table 6: BCCE (Boulder City Conservation Easement)

Critical Or Other Element	Affected	Critical Or Other Element	Affected
Air Quality	Yes	Threatened & Endangered Species	Yes
Area of Critical Environmental Concern (ACEC)	No	Wastes, Hazard/Solid	No
Cultural Resources	Yes	Water Quality	No
Farmlands, Prime/Unique	No	Wetlands/Riparian Zones	No
Floodplains	No	Wild and Scenic Rivers	No

Environmental Justice	No	Noxious Weeds	No
Notive American Religious Concerns	No	Wilderness	No
Special Status Species (plants and animals)	Yes	Visual Resources	Yes
Soils	Yes	Vegetation	Yes
Migratory Birds	No	Wildlife (other than tortoises)	Yes
Wild Horse & Burros	No	Livestock Grazing	No
RecreatioNol Activities	No	Mining Activities	No
Land and Realty Activities	No		

Table 7: Mt. Stirling

Critical Or Other Element	Affected	Critical Or Other Element	Affected
Air Quality	Yes	Threatened & Endangered Species	Yes
Area of Critical Environmental Concern (ACEC)	No	Wastes, Hazard/Solid	No
Cultural Resources	Yes	Water Quality	No
Farmlands, Prime/Unique	No	Wetlands/Riparian Zones	No
Floodplains	No	Wild and Scenic Rivers	No
Environmental Justice	No	Noxious Weeds	No
Notive American Religious Concerns	No	Wilderness	No
Special Status Species (plants and animals)	Yes	Visual Resources	Yes
Soils	Yes	Vegetation	Yes
Migratory Birds	No	Wildlife (other than tortoises)	Yes
Wild Horse & Burros	Yes	Livestock Grazing	No
RecreatioNol Activities	No	Mining Activities	No
Land and Realty Activities	No		

B. Resources Not Affected by Any Action

1. LSTS (Large - Scale Translocation Study Site)

This site is not located in any of the following environments: ACEC, Farmlands, Wetlands/Riparian areas, Floodplains, Wild and Scenic Rivers, Wild Horse and Burro herd area, Wilderness area, or Livestock grazing area.

The following resources or elements may occur within the project area but are not affected for the reasons stated:

Wastes, Hazard/Solid - The activities associated with translocation will not result in the transportation, use, or storage of hazard waste material.

Water Quality - There is no surface water within the project area except for ephemeral flows in washes during major rain events. The activities associated with translocation are not such as to cause any degradation of water quality during the ephemeral flow events or to subsurface water sources.

Environmental Justice - The project site is not located near any population centers and therefore does not affect the economically disadvantaged.

Native American Religious Concerns - Translocation would not affect this element as the type of activity would not affect the environment in any way that would conflict with Native American religious concerns.

Migratory Birds - Translocation activities, with the exception of fence construction, will not impact migratory birds. All clearing of vegetation with equipment for fence construction will only be conducted between August 30 and February 1 of each year to avoid the "take" of migratory birds or their nests.

Mining Activities - Translocation will have no affect on mining activities in the area. The project area is located in an area open to mineral entry and therefore such activities are not precluded from the area. The BLM will use their discretionary authority to approve or disapprove discretionary mineral activities such as leasable and saleable mineral operations based upon overall economic and environmental considerations. Non-discretionary activities such as locatable minerals will be addressed through the BLM's 3809 regulations.

Land and Realty Activities - Ongoing land and realty actions will continue as they have in the past. Future actions will be dependent upon their own merits. Though the presence of more tortoises in the area may affect the level of incidental take through direct mortality or harassment, the affect on the project would be negligible. The ROW grantees will already have desert tortoise monitors in the field during construction activity and an increase in tortoise numbers should not affect the number of monitors already required. However, the USFWS may have to adjust the allowable incidental take of tortoises during construction of a project to account for higher tortoise numbers.

Recreation - Though historically there have been a number of competitive OHV events within this site, desert tortoise are already present. An increase in desert tortoise numbers may result in a greater potential for "take". However, the increase in tortoise numbers should not affect the number or type of event, or the operational management of the event. Event sponsors will be required to abide by certain mitigation measures, such as locating start and pit areas in previously disturbed areas where feasible and having monitors in place to ensure permit compliance, etc. irrespective of translocation. The

BLM may however, have to re-consult with the USFWS to increase the allowable "take" so that OHV competitive events are in compliance with the biological opinion.

Noxious Weeds - The activities associated with translocation should not result in the introduction of noxious weeds or cause their increase.

2. Trout Canyon

This alternative is not located in any of the following environments: ACEC, Farmlands, Wetlands/Riparian areas, Floodplains, Wild and Scenic Rivers or Wilderness Area.

The following resources or elements may occur within the project area but are not affected for the reasons stated:

Wastes, Hazard/Solid - The activities associated with translocation will not result in the transportation, use, or storage of hazard waste material.

Water Quality - There is no surface water within the project area except for ephemeral flows in washes during major rain events. There are several springs just outside the boundary of the site, but there are no activities proposed in this alternative that would impact their sources or flows. The activities associated with translocation are such as to not cause any degradation of water quality during the ephemeral flow events or to subsurface water sources.

Environmental Justice - The project site is not located near any population centers and therefore does not affect the economically disadvantaged.

Native American Religious Concerns - Translocation would not affect this element as the type of activity would not affect the environment in any way that would conflict with Native American religious concerns.

Migratory Birds - Translocation activities, with the exception of fence construction, will not impact migratory birds. All clearing of vegetation with equipment for fence construction will only be conducted between August 30 and February 1 of each year to avoid the "take" of migratory birds or their nests.

Mining Activities - Translocation will have no bearing on mining activities in the area. The project area is located in an area open to mineral entry and therefore such activities are not precluded from the area. The BLM will use their discretionary authority to approve or disapprove discretionary mineral activities such as leasable and saleable mineral operations based upon overall economic and environmental considerations. Non-discretionary activities such as locatable minerals will be addressed through the BLM's 3809 regulations.

Land and Realty Activities - Ongoing land and realty actions will continue as they have been. Future actions will be dependent upon their own merits. Though the presence of more tortoises in the area may affect the level of incidental take through direct mortality or harassment, the affect on the project would be negligible. The ROW grantees will already have desert tortoise monitors in the field during construction activity and an increase in tortoise numbers should not affect the number of monitors needed more than already required. However, the USFWS may have to adjust the allowable incidental take of tortoises during construction of a project to account for higher tortoise numbers.

Recreation - Even though an increase in desert tortoise numbers may result in a greater potential for "take", such an increase should not affect the number or type of OHV event, or the operational management of the event. BLM anticipates a significant increase in OHV activities in the future in this area. The BLM will use their discretionary authority to approve or disapprove competitive or commercial OHV activity based upon overall social, economic, and environmental considerations. Normally OHV event sponsors are required to abide by certain mitigation measures, such as locating start and pit areas in previously disturbed areas where feasible and having monitors in place to ensure permit compliance, etc. irrespective of translocation. The BLM may however have to re-consult with the USFWS to increase the allowable "take" so that OHV competitive events are in compliance with the biological opinion.

Noxious Weeds - The activities associated with translocation should not result in the introduction of noxious weeds or cause their increase.

Livestock Grazing - Approximately 10,800 acres of this site overlaps approximately 15% of the Wheeler Wash grazing allotment (permit holders Perry & Norma Bowman, c/c Gary Bowman). The last time the allotment was used by the operator was in 1998 when 60 cows were licensed from June 6 through August 31. Translocation will have no effect on the operations of this allotment. However, livestock grazing may impact tortoises that are translocated to the site and therefore it would be conceivable that the County may purchase the grazing allotment from the current permit holder on a willing seller basis and then request a retirement of the allotment (allowed under the BLM RMP).

3. Desert National Wildlife Refuge

This alternative is not located in any of the following environments: ACEC, Farmlands, Wetlands/Riparian areas, Floodplains, Wild and Scenic Rivers, Wild Horse and Burro herd area, or Livestock grazing area. The Desert National Wildlife Refuge is withdrawn from realty actions and the mineral laws, therefore mining activities and land and realty activities are not affected by this alternative. This does not however preclude the refuge from implementing infrastructure improvements such as roads, installing kiosks, or other improvements.

The following resources or elements may occur within the project area but are not affected for the reasons stated:

Wastes, Hazard/Solid - The activities associated with translocation will not result in the transportation, use, or storage of hazard waste material.

Water Quality - Outside the springs located at Corn Creek, there is no surface water within the project area except for ephemeral flows in washes during major rain events. The activities associated with translocation are not such as to cause any degradation of water quality during the ephemeral flow events, or to subsurface water sources, or spring sources.

Environmental Justice - The project site is not located in an urban area and therefore does not affect the economically disadvantaged.

Native American Religious Concerns - Translocation activities would not affect this element as the type of activity would not affect the environment in any way that would conflict with Native American religious concerns.

Migratory Birds - Translocation activities, with the exception of fence construction, will not impact migratory birds. All clearing of vegetation with equipment for fence construction will only be conducted between August 30 and February 1 of each year to avoid the "take" of migratory birds or their nests.

Recreation - The Service does not allow off-road vehicular travel, or commercial or competitive OHV events within the refuge. Only street legal vehicles are allowed within the refuge boundary and these are restricted to designated roads and trails.

Noxious Weeds - The activities associated with translocation should not result in the introduction of noxious weeds or cause their increase.

Mineral Activity - The Desert National Wildlife Refuge was withdrawn from the mineral laws in 1994 (*Mineral Withdrawal Desert National Wildlife Range, Final EIS*) for a 20-year period. To extend the mineral withdrawal beyond 2014, the withdrawal process will have to be repeated.

Wilderness - The Gass Peak and Sheep Range recommended wilderness areas overlap approximately 42,455 acres of desert tortoise habitat that would be used for translocation if the refuge is selected. Desert tortoise translocation would not affect the suitability of these areas for wilderness designation. Translocation would not impact wilderness because desert tortoise translocation efforts would only supplement an existing natural desert tortoise population. All vehicles and equipment associated with translocation will remain on designated roads. Cross country travel will only be by foot. Fence construction will only be allowed where it does not conflict with wilderness designation requirements.

4. Boulder City Conservation Easement (BCCE)

This alternative is not located in any of the following environments: ACEC, Farmlands, Wetlands/Riparian areas, Floodplains, Wild and Scenic Rivers, or Livestock grazing area. The Eldorado Herd Management Area overlaps three or four sections of BLM lands in the very southeastern portion of this site. However, since the BLM set the management level of this herd area to zero in their land use plan, there are no conflicts between wild burros and any future translocation program (unless the BLM reverses that decision in the future).

The following resources may occur within the project area but are not affected for the reasons stated:

Wastes, Hazard/Solid - The activities associated with translocation will not result in the transportation, use, or storage of hazard waste material.

Water Quality - There is no surface water within the project area except for ephemeral flows in washes during major rain events. The activities associated with translocation are not such as to cause any degradation of water quality during the ephemeral flow events or to subsurface water sources.

Environmental Justice - The project site is not located near any population centers and therefore does not affect the economically disadvantaged.

Native American Religious Concerns - Translocation would not affect this element as the type of activity would not affect the environment in any way that would conflict with Native American religious concerns.

Migratory Birds - Translocation activities, with the exception of fence construction, will not impact migratory birds. All clearing of vegetation with equipment for fence construction will only be conducted between August 30 and February 1 of each year to avoid the "take" of migratory birds or their nests.

Mining Activities - The BCCE was closed to the mining laws upon transfer of the lands to Boulder City. The small BLM portion of this site remains open to the mining laws. However, translocation will have no bearing on mining activities in the area. The BLM will use their discretionary authority to approve or disapprove discretionary mineral activities such as leasable and saleable mineral operations based upon overall economic and environmental considerations. Non-discretionary activities such as locatable minerals will be addressed through the BLM's 3809 regulations.

Land and Realty Activities - With the exception of three utility corridors reserved by the BLM when the land transfer to Boulder City occurred, there are no plans to allow power lines, gas lines, or other utilities to cross the BCCE. Additional utility lines may be constructed within the corridors. Additional utilities may be constructed within the

existing corridors. Translocation will not impact these activities as they will be approved based upon the own merits. Though the presence of more tortoises in the area may affect the level of incidental take through direct mortality or harassment, the affect on the project would be negligible. The ROW grantees will already have desert tortoise monitors in the field during construction activity and an increase in tortoise numbers should not affect the number of monitors needed more than already required. However, the USFWS may have to adjust the allowable incidental take of tortoises during construction of a project to account for higher tortoise numbers.

Recreation - Competitive OHV events are not allowed within the BCCE (the portion proposed for translocation). Though the BLM portion of this site is open to such events, events have historically been permitted south of the Nelson Road. Even if events are allowed on the BLM portion, the affect on OHV activity is the same as in the other alternative translocation sites that overlap BLM lands.

Noxious Weeds - The activities associated with translocation should not result in the introduction of noxious weeds or cause their increase.

Wilderness – The El Dorado Wilderness Area lies immediately east of the BCCE on NPS lands. The wilderness area overlaps approximately 4,599 acres of BLM lands that make up this translocation site. There are no proposals for construction of fences or other infrastructures within the wilderness areas. Desert tortoise translocated to this site may very well wonder into the wilderness area. The desert tortoise is a native species and already occurs within the wilderness area and therefore would not impact the wilderness designation.

5. Mt. Stirling

This alternative is not located in any of the following environments: ACEC, Farmlands, Wetlands/Riparian areas, Floodplains, Wild and Scenic Rivers, Wilderness area, or Livestock grazing area.

The following resources may occur within the project area but are not affected for the reasons stated:

Wastes, Hazard/Solid - The activities associated with translocation will not result in the transportation, use, or storage of hazard waste material.

Water Quality - There is no surface water within the project area except for ephemeral flows in washes during major rain events. The activities associated with translocation are not such to cause any degradation of water quality during the ephemeral flow events or to subsurface water sources.

Environmental Justice - The project site is not located near any population centers and therefore does not affect the economically disadvantaged.

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[illegible]

Native American Religious Concerns - Translocation would not affect this element as the type of activity would not affect the environment in any way that would conflict with Native American religious concerns.

Mining Activities - Translocation will have no bearing on mining activities in the area. The project area is located in an area open to mineral entry and therefore such activities are not precluded from the area. The BLM will use their discretionary authority to approve or disapprove discretionary mineral activities such as leasable and saleable mineral operations based upon overall economic and environmental considerations. Non-discretionary activities such as locatable minerals will be addressed through the BLM's 3809 regulations.

Land and Realty Activities - Ongoing land and realty actions will continue as they have in the past. Future actions will be dependent upon their own merits. Though the presence of more tortoises in the area may affect the level of incidental take through direct mortality or harassment, the affect on the project would be negligible. The ROW grantees will already have desert tortoise monitors in the field during construction activity and an increase in tortoise numbers should not affect the number of monitors needed more than already required. However, the USFWS may have to adjust the allowable incidental take of tortoises during construction of a project to account for higher tortoise numbers.

Recreation - There have only been a few OHV events in the Mt. Stirling area over the past several years (Bruno, personal communications 2004[7]). These include the Dark Side M/C Race and the Mercury M/C Trail Ride. Both are motorcycle events. BLM and USFS anticipate a significant increase in OHV activity in this area in the future. An increase in desert tortoise numbers may result in a greater potential for "take" over that already approved by the USFWS. However, the increase in tortoise numbers should not affect the number or type of event, or the operational management of the event. The BLM will use their discretionary authority to approve or disapprove competitive or commercial OHV activity based upon social, economic, and environmental considerations. Normally OHV event sponsors are required to abide by certain mitigation measures, such as locating start and pit areas in previously disturbed areas where feasible and having monitors in place to ensure permit compliance, etc. irrespective of translocation. The BLM may however have to re-consult with the USFWS to increase the allowable "take" so that OHV competitive events are in compliance with the biological opinion.

Noxious Weeds - The activities associated translocation should not result in the introduction of noxious weeds or cause their increase.

Migratory Birds - Translocation activities, with the exception of fence construction, will not impact migratory birds. All clearing of vegetation with equipment for fence

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[7] Robert Bruno, recreation specialist, BLM Las Vegas Field Office, Las Vegas, Nevada

construction will only be conducted between August 30 and February 1 of each year to avoid the "take" of migratory birds or their nests.

C. AFFECTED ENVIRONMENT & IMPACTS

The following environmental elements may be affected by the proposed action and alternatives considered: air quality, visual resources, threatened and endangered species, special status species, wildlife, vegetation, soils, cultural resources, and wild horses and burros.

1. Air Quality

None of the alternative sites are located within a federally designated Class I area for air quality. However, the Desert National Wildlife Refuge site lies partially in Las Vegas Valley, a designated Non-Attainment Area for particulate matter less than 10 microns (PM10). The Trout Canyon site also lies within a Non-Attainment Area for PM10 in the Pahrump Valley. However, activities associated with translocation, including fence and cattle guard construction and installation are of such insignificance that they fall well below the "di Minimus" emission threshold for PM10 (100 tons/year).

Vehicular travel, associated with translocation (including monitoring and research), over roads and trails will have a small and temporary impact on air quality through the emissions of fugitive dust. The extent of fugitive dust generation is dependent upon season, weather conditions, number of vehicles, and vehicle speed. Fugitive dust will be generated in greater quantity during hot dry periods. During and after rains there will be very little, if any, dust generated. In most cases there will only be a few vehicles involved in translocation and associated activity. When and if the translocation site is used for training purposes, there is expected to be more vehicles involved (10-20) and thus more dust generated. However, if vehicles do not exceed a speed limit of 20 mph hour there should be little dust generated, and that will fall well within non-containment criteria established by Clark County.

Fugitive dust pollution can be expected to be much greater during construction and installation of fences and cattle guards. New fence construction will require trenching and clearance of vegetation with heavy equipment. Typically a tilted blade is used to cut the trench at least six inches deep while also clearing vegetation. This results in an area of disturbance at least eight feet wide. Cattle guard construction requires the digging of a trench at least three feet wide and 12 to 20 feet long, depending upon the width of the road in which the cattle guard is installed. Both activities could result in fugitive dust production. Retrofitting existing fences with a 1" by 2" mesh wire will cause little to no dust production. Vehicles can use existing paved highways for access as the fence will be installed along the highway right-of-way.

Impacts to air quality during fence and cattle guard construction and installation can be mitigated by following Clark County's dust abatement requirements.

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2. Visual Resources

The LSTS, Trout Canyon, and Mt. Stirling lie within a BLM designated Class III Visual Resource Management (VRM) Class (BLM, 1998b). The objective of this class is "to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer" (BLM Manual Handbook 8431-1, 1986). The BLM portion of the BCCE lies within VRM Class II in which the objective is to "retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer." There is not a visual classification for the Boulder City owned portion of the BCCE site. The U.S. Fish and Wildlife Service does not have visual resource classifications.

3. Threatened and Endangered Species

The only federally listed species affected by the translocation of desert tortoises to any of the alternative sites is the desert tortoise. Tortoise densities within all of the alternative sites vary from low to moderate. Table 8 compares the relative abundance of tortoises based upon transect data collected in the late 1970s through the 1980s.

Table 8: Relative Abundance of Desert Tortoises within Each Alternative Site

Alternative Translocation Site	Relative Abundance Of Tortoises (based on Total Adjusted Sign)	Number of Transects/Relative Abundance	Explanation
LSTS	Low to Moderate (30-50/sq. mile)	39 total 2 – very low 16 - low 15 - moderate 2 – high	The average was 4.6 sign per transect.
Trout Canyon	Low-moderate (45-60/sq. mile)	11 total 2 – very low 5 – low 2 – moderate 1 – high & 1 – very high	The population estimate is presumed to be at the lower end of the moderate category.
Desert National Wildlife Refuge	Very Low to Low (5-30/sq. mile)	20 total 9 – very low 11 - low	Estimated based upon the mid-point of very low to low numbers
BCCE	Low (10-45/sq. mile)	33 total 10 – very low 16 – low 6 – moderate 1 – very high	The average was 2.3 sign per transect. It appeared that there were more tortoises in one particular soil type that ran north/south through the west half of the east half of the site. The northwest corner appeared to have very low numbers.
Mt. Stirling	Low (10-45/sq. mile)	2 total 2 - low	Only two transects were ran in this site. Both indicated a low relative abundance.

The concept of carrying capacity, generally applied to bird and mammal species, especially game species, may not be applicable to desert tortoises. The factors that influence desert tortoise density include frequency and extent of annual plant production,

local predation, availability of thermal refugia, elevation, perennial vegetation cover, and the frequency and duration of past drought episodes (Marlow, personal communications 2004[8]). As described earlier, scientists at the University of Nevada, Reno (UNR) conducted an experiment in 2001-2003 at the DTCC to determine how tortoises would fare under different densities. The study compared tortoise densities from 150 animals/km^2 to 1500 animals/km^2. In the parameters measured - animal condition, occurrence of URTD, reproductive output, and mortality – there were no significant differences between the control group and densities less than 850 tortoises/sq. km^2, indicating that habitats in southern Nevada may support densities higher than currently occur in the wild (Saethre et al. 2003). Additional translocation studies conducted at the LSTS (Field, et al 2000; Nussear, et al 2000; Tracy, et al 2000) demonstrated that translocated desert tortoises displayed an increase in their movements and distance traveled during the initial transplant, but by the second year displayed very similar movement patterns to resident tortoises. For the LSTS, mortality rates were no different for translocated tortoises than resident tortoises and by the second year the translocated tortoises appeared to do as well as resident tortoises as measured by survivorship, reproduction, movement distances, home ranges, social interactions, burrow selection, and habitat selection. Because captive desert tortoises are well fed and watered prior to their release into the wild, they are typically in very good physical condition when released. This may give them a survival advantage, especially if the resident wild population was less fit due to experiencing drought years.

The U. S. Fish and Wildlife Service estimated the tortoise density at the LSTS to be around 17.9 adult and subadult tortoises per square kilometer prior to the initiation of the translocation efforts and 11.7 adult and subadult tortoises per square kilometer for 2001 (Medica, personal communications 2004[9]). After translocating approximately 1,516 adult and subadult tortoises, the 2001 density estimate was 65% of the starting density. Medica believed there were two possible explanations for this finding. The first explanation is that the methods used for estimating the two densities were different and therefore may not be comparable, and secondly, at least two significant droughts occurred since translocation began. These droughts may have caused substantial tortoise mortalities and therefore the number of tortoises translocated may not have been sufficient to replace those that died. He found that relatively high mortalities appeared to have occurred throughout California and Nevada due to the drought conditions. Therefore, the reduced tortoise density found at the LSTS in 2001 was not inconsistent with what was found elsewhere. But it can not be entirely ruled out that increased number of tortoises in the LSTS due to translocation had some effect on tortoise mortality, even if induced by drought condition.

All of the translocation alternative sites have relatively low tortoise densities that could potentially be increased. Any potential increase in tortoise densities would be well below that studied in the experimental density study at the DTCC. That study found no relationship between densities less than 850/sq.km^{2}and deleterious impacts.

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[8] Dr. Ron Marlow, UNR Biology Department, Las Vegas, Nevada

[9] Phil Medica, ecologist, USGS Biological Resources Division, Las Vegas, Nevada

Based upon the studies described above, it is presumed that the translocation of healthy desert tortoises would not have a negative impact on existing tortoise populations at any of the alternative translocation sites under consideration. Any translocation effort, no matter which site is selected, will be closely monitored to ensure that translocation does not have negative impacts on the resident tortoise population. Monitoring of desert tortoises is currently conducted using line distance sampling. Other methods approved by the U.S. Fish and Wildlife Service may be used. Tortoise numbers do apparently fluctuate due to environmental conditions such as persistent droughts that may extend for three or four years. Desert tortoise surveys conducted in both California and Nevada in 2002 -2003 indicated that there were relatively high tortoise mortalities range-wide, irrespective of tortoise densities (Medica, personal communications, 2004). These mortalities were believed to be at least indirectly affected by drought. Multiple years of drought, with little to no forage production, can result in environmental stresses that may have physiological impacts to tortoises Nagy and Medica (1986). It is expected that relatively high mortalities may affect both resident and translocated tortoises during extended drought conditions. However, based upon the studies and surveys described above, these mortalities would be attributable to the drought conditions and not to higher densities. Though researchers have documented that desert tortoise translocation can be successful, the long term effect of translocation on a resident population is unknown. Translocation data has been collected for seven years at the LSTS with no apparent deleterious impacts to resident desert tortoises or the population as a whole. Reduced densities between 1997 and 2001 at the LSTS were thought to be consistent with high mortality rates observed throughout Nevada and California due to drought conditions. Though the success of translocation over a long period has not been fully analyzed, the LSTS provides a good baseline for continuation of population monitoring to fully analyze translocation over several decades or more.

Some tortoise mortality may result from the construction of fences and cattleguards. Tortoise habitat may be disturbed as well through surface disturbance associated with fence construction. Some tortoise habitat will be unavailable between the highway pavement and new fences constructed along the highways. However, the reduction in tortoise mortality from "road kill" is expected to more than offset these impacts. Table 9 below shows the amount of tortoise habitat that may be impacted due to fence construction.

Table 9: Potential Surface Disturbance at Each Translocation Site[10]

Site	No. of Miles of New Fence / No. of Cattle Guards	No. of Miles of Retrofitting Existing Fences	Potential No. of Acres of Surface Disturbance
LSTS	1.7 / 0	0	3
Trout Canyon	20 / 6	0	34
DNWR	40 / 8	0	68
BCCE	8.75 / 4	0	15
Mt. Stirling	3 / 4	21	13

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[10] Surface disturbance is based upon a 14 ft. wide footprint on new fence construction, only a few feet wide footprint on retrofitting, and approximately 100 sq. ft. of disturbance associated with cattle guard installation.

[illegible]

[illegible]

[illegible]

[illegible]
[illegible]

[illegible]

Gilbert (EnviroPlus,1996) studied various barrier designs at the DTCC for Clark County to determine which designs were most effective as tortoise barriers while minimizing impacts to other wildlife species. He also examined the relative cost effectiveness of constructing and maintaining each barrier design. The barriers tested included extruded concrete curb, plastic diamond mesh, hardware cloth, welded wire mesh, pre-cast concrete panels, and galvanized rolled steel. Different dimensions of openings were also analyzed. He concluded that welded wire mesh with a 1" horizontal and 2" vertical opening provided the best all around design. He believed that most reptiles and small mammals could easily negotiate the barrier. Boarman and Sazaki (1996) compared tortoise and other vertebrate mortalities along Hwy 58 in California between fenced stretches of the highway and unfenced stretches. In this case, a 1.3 cm (½ inch) mesh hardware cloth was used as the barrier. He found 88% fewer vertebrate carcasses and 93% fewer tortoise carcasses along the fenced section of the highway. In both cases, the authors recognized that some wildlife species could get caught in the mesh, but believed that the benefits outweighed the occasional loss of individual animals. The 2" vertical by 1" horizontal welded wire mesh fence is the design adopted in Nevada and will be used in the proposed fence construction.

An unknown number of desert tortoises will find there way outside of the translocation site, whether fenced or not. A dead adult female translocated tortoise was found a few miles south of the LSTS in 2003 (Slone, personal communications 2004[11]), even with a tortoise proof fence. Given the findings of the effects of translocated tortoises on resident tortoises in the LSTS, at least during the short-term, such movements are not anticipated to be of significant consequence to resident tortoises outside the translocation site. At least if the number of translocated tortoises that do find their way outside the translocation site is relatively small.

4. Sensitive Species

Table 10 lists the BLM classified sensitive species that may occur in one or more of the alternative translocation sites. There are 12 bat species listed as sensitive species that may occur in any of the alternative sites. None of these bat species would be impacted by translocation. Desert bighorn sheep may be occasionally found in the steeper habitats of any of the alternative sites, or moving through the sites. Observations of agonistic encounters between desert tortoise and Gila monsters have been observed in southern Nevada (Gienger et. al. 2004). Because Gila monsters prey on desert tortoise eggs, increased tortoise numbers may have a positive impact on Gila monsters.

The construction of tortoise proof fences may have a negative impact on desert bighorn sheep movement through the translocation sites. The design of the fence is critical to minimize impacts to bighorn sheep. A mesh wire fence constructed no higher than 20 inches would not be a barrier to desert bighorn. The spacing of the wire strands above the mesh is critical. To provide for bighorn access, the strands should be at least 20 inches above the mesh. Burrowing owls and loggerhead shrikes may be found at all the alternative sites while the phainopepla, Crissal thrasher, LeConte's thrasher, and gray

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[11] Sidney C. Slone, wildlife biologist, while working on the Bighorn gas pipeline near Primm, Nevada.

vireo would only be associated with the mesquite stands at Corn Creek within the Desert National Wildlife Refuge. Burrowing owls may be impacted if their dens or burrows are destroyed from heavy equipment used to prepare the ground for new fence construction With seasonal restrictions, bird species should not been impacted. The chuckwalla and Gila monster may be found anywhere within any of the sites where suitable habitat exists. Because chuckwalla occur where there are rock ledges or large boulders, they are limited in their distribution. Fence construction could have some impact to chuckwalla and Gila monsters through direct mortality and impede movement after the fence is constructed.

Table 10: BLM State Sensitive Plant & Vertebrate Species

Species	State Listed Also[12]	Site
Mammals		
Desert bighorn sheep – Ovis canadensis nelsoni		All Sites – passing through
Spotted bat – *Euderma maculatum*	T	All Sites
Greater western mastiff-bat - *Eumops perotis californicus*		All Sites
Allen's big-eared bat - *Idionycteris phyllotis*		All Sites
California leaf-nosed bat - *Macrotus californicus*		All Sites
Small-footed myotis - *Myotis ciliolaburm*		All Sites
Long-eared myotis - *Myotis evotis*		All Sites
Fringed myotis - *Myotis thysanodes*		All Sites
Cave myotis - *Myotis velifer*		All Sites
Long-legged myotis - *Myotis volans*		All Sites
Yuma myotis - *Myotis yumanensis*		All Sites
Big free-tailed bat - *Nyctinomops macrotis*		All Sites
Townsend's big-eared bat - *Corynorhinus townsendii*		All Sites
Birds		
Burrowing owl – *Athene cunicularia*	P	All Sites
Phainopepla - *Phainopepla nitens*		DNWR - mesquite
Crissal thrasher – *Toxostoma crissale*		DNWR - mesquite
LeConte's thrasher – *Toxostoma lecontei*		DNWR - mesquite
Loggerhead shrike – *Lanius ludovicianus*		All Sites
Gray vireo – *Vireo vicinior*		DNWR - mesquite
Reptiles		
Chuckwalla - *Sauromalus obesus*		All Sites
Gila monster – *Heloderma suspectum*	P	All Sites
Plants		
White bearpoppy – *Arctomecon merriamii*		DNWR, Mt. Stirling
Curve-podded Mojave milkvetch – *Astragalus mohavensis* var. *hemigyrus*		DNWR, Mt. Stirling, Trout Cyn
Yellow twotone beardtongue – *Penstemon bicolor* ssp. *bicolor*		LSTS, DNWR, BCCE
Rosy twotone beardtongue – *Penstemon bicolor* ssp. roseus		LSTS, DNWR, BCCE
Parish's phacelia – *Phacelia parishii*		DNWR

With the exception of fence construction, it is not anticipated that sensitive plant species will be impacted by translocation, monitoring, and research activity. Parish's phacelia occurs on barren alkaline flats and playas within the Desert National Wildlife Refuge. No fences are proposed to cross Parish's phacelia habitat. Yellow and rosy twotone beardtongue is generally found in very gravelly washes. There is potential for new fences to cross washes where these plants may occur within the Desert National Wildlife Refuge, Mt. Stirling, and BCCE sites. The curve-podded Mojave milkvetch is found in carbonate gravels and derivative soils on terraced hills, ledges, and slopes within the Desert National Wildlife Refuge and Mt. Stirling sites (Nevada Dept. of Conservation

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[12] T = threatened status, P = protected status per Nevada Administrative Code 503.005 – 503.080.

and Natural Resources, 2001, Hiatt and Boone 2003). These plants could be impacted where new fence construction ties in to ridges. White bearpoppy could occur almost anywhere within the Desert National Wildlife Refuge and Mt. Stirling sites. They grow in limestone and dolomite derived soils at elevations from 2,000 to 6,200 feet. These plants could be impacted by fence construction anywhere within the two sites mentioned.

5. Wildlife

Vehicular travel associated with translocation activities, including monitoring and research, may result in a few animals being crushed by vehicles. However, this should be a relatively rare occurrence. Translocated tortoises should not have any impact to other native species. Wildlife species may be impacted with the crushing of vegetation (e.g. bird nests) during fence retrofitting and surface disturbance involved with the construction of new fencing. This impact may occur through both direct mortality of reptiles and small mammals and their habitat (e.g. plants and burrows). Kit fox may be impacted if their dens or burrows are destroyed from heavy equipment used to prepare the ground for new fence construction. Some wildlife species may be impeded by new fence construction or the retrofitting of existing range fences. Engelke (1992) found zebra-tailed lizards, horned lizards, chuckwalla, rattlesnakes, and jackrabbits caught in temporary tortoise holding pen chicken wire fences associated with the American Honda Corporation's test track in California. Boarman et.al. (1997) found five different species of reptiles climbing over, running through, or getting caught in a 1.3 cm mesh hardware cloth tortoise barrier along Highway 58 in California. Even so, they believed that barrier fences could reduce mortality of desert tortoise and other wildlife species. Boarman and Sazaki (1996) found 88% fewer vertebrate carcasses (93% fewer tortoise carcasses) along the fenced segments of Highway 58 than unfenced. Gilbert (1996) found that different mesh sizes affected different reptile species differently. The smaller mesh sizes could trap smaller reptile species but not allow larger reptile species to pass through. He found that none of the barriers tested impeded the passage of small mammals. Small mammals such as the antelope ground squirrel (*Ammospermophillis leucurus*) were able to jump or climb over the fence design (2.5 cm x 5.1 cm mesh) proposed for this project. He presumed that larger mammals such as coyote and kit fox would not be inhibited by the proposed fence design.

6. Vegetation

Activities associated with translocation will have minimal impacts to vegetation. Vehicles will remain on existing roads and trails. However, due to the narrow width of many of the roads and trails, vehicles may occasionally drive onto the roadberm to avoid blocking the road or to turn around. These activities may result in an occasional plant being crushed. Crews walking across the desert may result in a few plants being trampled. Likewise, installation of rebar or other markers that may be associated with monitoring or research activity may also affect an occasional plant. Impacts to vegetation associated with fence and cattle guard construction are much greater. Vegetation will be

impacted with construction activity associated with fence and cattle guard installation. Up to a fourteen foot wide swath of vegetation will be heavily impacted along fence lines where new fence construction is necessary. Impacts associated with cattle guards should be fairly minimal as equipment can be used from the existing roadway to install the cattle guards. However, ditch construction associated with cattle guard installation may result in up to 100 feet of new disturbance for each cattle guard. Retrofitting existing fences as occurs at the Mt. Stirling site will have very little impact. Some individual plants may be crushed in order to install the mesh wire onto the existing fence and the bending over of the mesh flush with the ground surface. Table 9 quantifies the extent of surface disturbance, and subsequent impacts on vegetation, that may be expected for each alternative.

7. Soils

Impacts to soil from translocation, monitoring, and research are virtually negligible. However, soils will be impacted by surface disturbance activity associated with the use of heavy equipment for fence construction. The top few inches of soil will be disturbed and redistributed. Soils will be more compacted where vehicles and heavy equipment travel. See Table 9 above for impact quantification.

8. Cultural Resources

Activities associated with translocation will not impact cultural resources with the exception of cross-county fence construction. Vehicles will remain on existing roads and no equipment will be used that may result in surface disturbance activities. However, surface disturbing activities associated with fence construction may impact cultural resources where the fence crosses open land and not follow along a highway boundary. Table 11 identifies the number of miles of new fence construction that does not fall within existing highway rights-of-way.

Table 11: New Fence Construction Outside Highway Rights-of-Way

Site	Miles of Fence Construction Needed
LSTS	1.7
Trout Canyon	5
DNWR	40
BCCE	8.75
Mt. Stirling	3

9. Wild Horse and Burro

The Trout Canyon and Mt. Stirling alternative sites may impede wild horse and burro movement if the cross country fences are constructed as proposed. See Maps 3 and 6 for fence construction sites and herd management areas within the two sites. The entire Trout Canyon site lies within the Wheeler Pass Heard Management Area (HMA). Between the Wheeler Pass HMA and Johnnie HMA (located just northwest of the Trout Canyon site), 50 wild horses and 168 wild burros were counted during a March 2004 survey conducted by the BLM. Though most of these animals occur northwest of the site, at least some of them can be expected to use this site. In fact, horses and burros are known to use both Appaloosa and Yount Springs. Both springs are located on USFS lands immediately adjacent to the site's 1250 meter boundary. The implementation of translocation would have no affect on the use of this area as a herd management area nor would it affect the establishment of an AML (allowable management level) for horses and burros. However, the construction of five miles of new fence (3.25 miles near the county line and 1.75 miles at Lovell Wash) inland from S.R. 160 may impede the movement of wild horses and burros. Though in both cases, horses and burros can access their herd area by going around the fences.

The Mt. Stirling site is completely overlapped by two herd management areas - the Wheeler Wash HMA and the Johnnie HMA. The former is located in Clark County and the latter in Nye County. BLM counted 228 horses and 32 burros in these two HMAs during their March 2004 survey. Though only a small portion of these HMAs overlap the Mt. Stirling site, horses and burros are known to occur throughout this site (McFadden, personal communications 2004[13]). Except for the proposed new fence that would run south from the gravel pit, it is not expected that a desert tortoise translocation program will impact the HMAs or the establishment of AMLs. The new fence could impede wild horse and burro movement, though horses and burros may still use their herd area by traveling around the fence.

D. RECOMMENDED MITIGATION MEASURES

1. Rebar shall not be installed in desert washes to reduce potential for injuries to people and equipment that might use the washes.
2. Only biodegradable flagging shall be used when marking transects or other locations to reduce visual impacts.
3. Researchers and monitors shall not exceed a 25 mph speed limit to reduce fugitive dust emissions.
4. All vehicles and equipment used for translocation, monitoring, and research shall remain on existing roads and trails and only park in existing disturbance.

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[13] Gary McFadden, wild horse and burro specialist, BLM Las Vegas Field Office, Las Vegas, Nevada

5. Permanent structures will not be installed as a result of research efforts unless approved by the appropriate land management agency.

6. The integrity of tortoise-proof fences associated with translocation sites shall be maintained by implementing a monitoring and maintenance program approved by USFWS.

7. Surface disturbance created by heavy equipment associated with new fence construction shall be minimized and/or restored. Clark County will be required to implement this action in conjunction with fence construction activities.

8. All new fence construction will only be allowed during the period between August 30 and February 1 of each year to avoid "take" of migratory birds or their nests.

9. A cultural resource survey and report shall be completed for all new fence construction where a previous cultural clearance can not be documented. The report shall be approved by the land management agency and shall include the survey findings and any necessary mitigation that may be necessary.

10. All vehicles and equipment used for new fence construction shall remain on the highway right-of-way side. No more than three feet of disturbance will be allowed on the opposite side of the highway right-of-way.

11. All vehicles and equipment used for retrofitting the existing highway fence along U.S. 95 at the Mt. Stirling site shall remain within the highway right-of-way or on existing roads and trails.

12. Prior to using any site for translocation, other than the LSTS, a tortoise survey shall be conducted to obtain baseline data on population density and the existence of disease within the population.

13. Clark County shall ensure that desert tortoise populations are adequately monitored within each translocation site to determine the long-term effect of translocation on both resident and translocated desert tortoises. The researchers shall meet with Clark County, the U.S. Fish and Wildlife Service, the Nevada Department of Wildlife, and the affected land management agency to report on the monitoring/research program and to determine program direction.

14. Prior to the implementation of a desert tortoise translocation program at the BCCE, the County shall address the concerns of the USFWS regarding issues related to genetics and disease.

15. The BLM, USFWS, and Clark County shall work together to ensure that the LSTS is effectively managed for desert tortoise translocation consistent with BLM's RMP.

16. The BLM and USFWS will review existing "take" levels for any site chosen for translocation and modify the "take" level to reflect higher tortoise densities expected from translocation.

17. A Section 7 consultation will be completed prior to the use of any of the alternative sites for translocation unless the U.S. FWS makes a determination that consultation is not required due to the fact that Clark County's Sec. 10 permit already covers translocation.

18. Prior to the use of the Desert National Wildlife Refuge for translocation, the FWS shall make a determination of whether the use of the refuge for translocation is compatible with the purpose of the refuge.

19. Prior to use of the BCCE for translocation, a management plan for the site shall be completed.

20. Clark County shall implement an outreach/public education program to reduce the number of desert tortoises produced in captivity with the goal of reducing the number of pet tortoises picked up through the County's pick up service to no more than 100 annually within 10 years.

21. The County shall ensure that a record of all tortoises collected and processed through the County's pick-up service is maintained. This record shall include minimally the size, gender, and health of individuals tortoises collected, and the origin of each tortoise (i.e. captive, wild, and location from which it came), and its final disposition.

22. Translocation sites outside the LSTS must be approved by the USFWS and be consistent with the *Desert Tortoise Recovery Plan* (which is currently under revision).

E. RESIDUAL IMPACTS

Depending upon which alternative, or combination of alternatives, are selected for translocation, there will be a minimum of three acres to a maximum of 117 acres of surface disturbance as the result of fence construction. The later figure includes an assumption that three alternative sites (DNWR, Trout Canyon, and BCCE) are all chosen to be used for desert tortoise translocation over the next 30 years. These impacts will gradually diminish over time as the surface disturbance associated with new fence construction are ripped and seeded and native vegetation becomes reestablished. Invasive non-native annuals such as red brome (*Bromus rubens*), Russian thistle (*Salsola tragus*), and filaree (E*rodium cicutarium*) are expected to increase on the disturbed sites initially. The long-term impact on resident tortoise populations through translocation is unknown. Studies to date indicate that translocated tortoises quickly settle down and behave similar to residents and both residents and translocated tortoises seem similar as measured by survivorship, reproduction, movement distances, home ranges, social interactions, burrow selection, and habitat selection. Once tortoises are translocated to a site, it would be impractical and unfeasible to remove translocated tortoises. Some reptiles and small mammals may die as a result of being trapped in the fence. Likewise some animal movement may be

impeded by the fences. However, the reduction in road kill would probably result in an overall benefit for such animals. The potential for "take" of desert tortoises may increase within translocation sites where tortoise densities are increased due to translocation. Some translocated desert tortoises may eventually move outside the translocation site.

F. CUMULATIVE IMPACTS

Tortoise densities in the selected alternative site(s) may eventually be much higher than occurred prior to translocation. Assuming the number of desert tortoises picked up continues at the current rate, densities could approach over 750 tortoises/sq. mile if all 30,000 tortoises anticipated to be collected over the next 30 years are translocated to the LSTS (the smallest site). The selection of two or more sites will result in fewer tortoises translocated to any one site and therefore densities could expect to be less than the 400 tortoises/sq. mile believed to be acceptable based upon the density study conducted at the DTCC. However, this study only covered a few years and may not represent densities that are sustainable over a longer period of time. It is presumed that current densities are less than the potential due to long-term human associated impacts. But the density potential for any specific habitat site is not known. Significantly higher densities may increase density induced mortality by increasing the incidence of Upper Respiratory Tract Disease or other diseases. Turner et al. (1984) and Medica (personal communications 2004) found that relatively high mortality of tortoises occurred during extended drought periods. The influence of normal mortality, drought induced mortality, or density induced mortality is not known, but it is presumed that any or all types of mortalities will keep tortoise densities well below 400 tortoises/sq. mile level. However, the extent that releasing so many tortoises may have on inducing mortality is unknown. Managing for no more than 400 tortoises/sq. mile may reduce the likelihood of density induced mortality. Even that number may be too high in the long-term. By selecting one or more sites in addition to the LSTS, tortoise densities could be maintained at less than 400/sq. mile. Close monitoring of translocation sites will help to identify potential problems, especially concerning density dependent problems. The monitoring studies associated with translocation will help to ensure that translocation efforts are modified as necessary to reduce density dependent mortalities.

Higher densities, but below the 400/sq. mile threshold, could help to improve population stability and likelihood of persistence. Alternatively, higher densities may result in higher mortalities especially during drought periods. It appears that relatively high mortalities occur naturally during extended drought periods in many tortoise populations in the Mojave Desert - irrespective of tortoise densities. Germano and Joyner (1989) found that the tortoise population in Paiute Valley rebounded after a high mortality period between 1980 -1981. Whether higher tortoise densities would cause an increase in drought induced mortality is unknown. But even so, it appears that the population may be able to rebound from such a mortality event.

Higher tortoise densities within a translocation site may result in higher human caused mortalities from OHV events, casual OHV use, utility line construction, or other human activities as the likelihood of human/tortoise encounters would increase. Any increase in human caused mortality may result in a project or activity exceeding their "take" allowed under their particular biological opinion. For this reason, the BLM will consult with the FWS to increase the allowable "take" where necessary for any translocation site selected.

G. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The only irreversible and irretrievable commitment of resources is the translocation of desert tortoises. Once translocated, it would be prohibitively expensive and technically difficult to find and re-capture all the released tortoises. Fences and other infrastructures can be removed and over time any surface disturbance would eventually re-vegetate naturally.

SECTION 4

A. LAND USE ACTIVITIES THAT MAY AFFECT TRANSLOCATION

Though desert tortoise translocation activities are not anticipated to have impacts on most other multiple-use activities that may occur within each of the alternative sites (especially concerning BLM lands), the reverse is not true. R&PP leases and ROW grants may affect the suitability of a site for desert tortoise translocation. Other multiple-use activities that may also have an effect on desert tortoise translocation include recreation, livestock grazing, and wild horse and burros. Specific types of multiple use activities allowed on public lands managed by the Bureau of Land Management are guided by the BLM's *Las Vegas Resource Management Plan.* Most activities, with the exception of casual use, are discretionary and require NEPA and Sec. 7 consultation which may affect whether a specific project is approved or under what conditions or restrictions might it be allowed. The potential affect of these activities on each of the alternative translocation sites are discussed below.

1. Realty Actions

The construction of power lines, gas lines, fiber optic lines, flood control structures, and associated roads will result in degradation or loss of habit and the "take" of desert tortoises through harassment or direct mortality. An increase in desert tortoise numbers as a result of translocation may result in a higher level of "take" than would otherwise occur during construction activities. Given that the land management agencies are generally unaware of future realty actions until they receive a proposal from a project proponent, it is difficult to fully understand the long-term effects that future projects may have on translocation efforts within a particular site. Some sites such as the Desert National Wildlife Refuge are withdrawn from the general lands and minerals laws. The County's conservation easement with Boulder City provides a certain level of protection from realty actions with the exception of the utility corridors established and retained by the BLM. Realty actions currently before the BLM for consideration are described below. The BLM's *Las Vegas Resource Management Plan* provides direction as to whether a project is allowed within a particular area. The presence of a desert tortoise translocation program will not supercede BLM's land use plan. However, BLM can apply stipulations to reduce or mitigate impacts as part of their normal environmental processes.

a. LSTS

The LSTS contains the Amargosa-Roach utility corridor which extends for 8 miles and is 2,460-foot wide. The Kern River Gas Company has a 125-foot wide right-of-way (two different 36-inch natural gas pipelines parallel with each other) that runs the entire length of the LSTS site (9 miles). Nevada Power has a six mile long 500 kV single pole power line that runs for six miles through the north half of the LSTS. This line enters from the north and then follows the Valley Electric single pole line along Amargosa-Roach utility corridor. Another single pole power line runs for 1.2 miles through the northeast corner of the LSTS within a hundred feet of the I-15 right-of-way boundary. A Sprint fiber

optic cable extends the entire length of the LSTS parallel with the I-15 boundary. This right-of-way has become mostly re-vegetated naturally. The Las Vegas Valley Water District has three water wells located in Sections 9 and 10 just south of S.R. 161. Each well site is fenced with approximately 1/3 acre disturbance associated with each well. A single-pole power line and road services each site for a total distance of 1.2 miles.

A 500 MW electric power generating plant located less than one-half mile west of the LSTS (Ivanpah Power Generation Project) (PARSONS 2002) has recently been approved by the BLM. This project includes a 30 acre natural gas fired generation plant, a 230 kV transmission line that crosses the LSTS for almost 7 miles, and a water supply line from Jean, Nevada that will also cross the LSTS for almost 7 miles. Total disturbance in the LSTS from this project could exceed 40 acres. The Sempra Energy Natural Gas Supply Pipeline Project is close to being approved by the BLM and includes the construction of a natural gas pipeline across the LSTS with the potential of impacting approximately 60 acres of habitat.

The BLM transferred 13,000 acres to Clark County for the development of the Ivanpah Cargo Airport under *The Ivanpah Valley Airport Public Lands Transfer Act* and *The Clark County Conservation of Public Lands and Natural Resources Act of 2002.* These lands lie immediately adjacent to the LSTS just east of I-15. The BLM's Las Vegas RMP identifies 3,626 acres around Jean, Nevada for disposal. This same area is also part of the Ivanpah Airport noise compatibility area. Part of both the disposal area and noise compatibility area overlays the northeast corner of the LSTS. Though I-15 provides a barrier between these actions and the LSTS (except for the small portion of land identified for disposal), concerns have been expressed by some that ancillary activities associated with the airport and other disposal actions will create long-term impacts to the LSTS.

The Clark County Conservation of Public Lands and Natural Resources Act of 2002 also established the Interstate Route 15 Corridor which fully encompasses the LSTS. The Act essentially identifies that these lands will be managed in accordance with the BLM's RMP and the Clark County Multiple Species Habitat Conservation Plan.

The accumulation of ongoing projects, proposed projects, and legislative activity associated with public lands in and around the LSTS may affect the long-term viability of the LSTS to withstand habitat fragmentation and urban encroachment. Though most of the disturbances associated with these projects are temporary in nature, as the BLM will require habitat restoration, it will take years for the habitat to be restored to pre-construction condition. In addition to the effects of direct habitat loss, linear projects that cross the LSTS may result in more subtle habitat fragmentation. The construction of access routes along linear type projects often turn into roads that provide more access which may result in more chances of tortoise/human encounters. Such encounters are often not beneficial to the tortoise. The construction of the Ivanpah Airport across I-15 from the LSTS will have its own consequences on the long-term viability of the LSTS as

a long-term haven for translocated desert tortoises. Though *The Clark County Conservation of Public Lands and Natural Resources Act of 2002* does not require BLM to dispose of lands identified in the Act as the Interstate Route 15 Corridor, the Act does allow for the disposal or transfer of these lands without the benefit of land use planning requirements. This corridor overlaps the entirety of the LSTS. Though the act mentions that management should be consistent with RMP and MSHCP designations, there is not a specific designation in either plan that would prevent the disposal or transfer of any or all of these lands. The construction of the airport and off-site enterprises that could be expected with any large airport and construction of energy projects and associated infrastructures, could all lead to a large urban expansion in and around both Jean and Primm. As the number of employees associated with the growing economy of the area increases so will the eventual demand for housing. As the populations of these communities grow, human recreational activities within the LSTS will also increase.

b. Trout Canyon

There are only three power lines including the Valley Electric line which services Pahrump and a power/telephone line that follows the Trout Canyon road to the small Trout Canyon community within the Humbolt-Toyibe National Forest. There are no utility corridors or any proposals to dispose of public lands within this site. However, there is 335 acres of private land that is open for development. Though none of the land has been developed, the BLM has received an application for an access road to service a portion of the private land from S.R. 160. The applicant intends to sell five acre homesites. With the development of these lands there will be an expected increase in mortality of tortoises from traffic and increased recreational use of adjoining public lands. Nye County (Marble, personal comm. 2004[14]) has indicated that the County anticipates that Pahrump will eventually need some of these lands for expansion.

c. Desert National Wildlife Refuge

The Desert National Wildlife Refuge is withdrawn from public land and mineral laws and therefore is not subject to disposal, R&PP (Recreation and Public Purpose) leases, rights-of-way, or mining activity. An existing power line serves Corn Creek. The Clark County Shooting Park is proposed immediately adjacent to the refuge at T. 18 S., R. 60 E., Secs. 25-27. The proposed Mountain Edge Parkway would cut through the southwest corner of T. 18 S., R. 61 E., Sec. 31 within the refuge boundary. However, this is inconsistent with the purpose of the refuge and therefore the route may be altered. Urban encroachment along the south boundary of the refuge has created management problems through uncontrolled OHV activity (Sprunger-Allworth, personal communications 2004[15]). As Las Vegas expands northward and along U.S. 95, the urban interface will expand and compound this problem. The refuge has received $600,000 from SNPLA to fence the Moapa Valley National Wildlife Refuge and approximately 20 miles of the

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[14] Dr. Jim Marble, Director, Natural Resources, Nye County, Nevada

[15] Amy Springer-Allworth, refuge manager, Desert National Wildlife Refuge. Las Vegas, Nevada.

southern boundary of the Desert National Wildlife to better control access. An opportunity exists to require the County to fence the north boundary (3 miles) of the proposed Shooting Park with a tortoise proof fence to help control access.

d. BCCE

The Boulder City Conservation Easement agreement states that the purpose of the easement is to "assure that the Property will be retained in a natural condition and to prevent any use of the Property that will impair or interfere with the Natural Resources Values." However, the agreement does allow Boulder City to discharge effluent from their water treatment facility and construct and maintain utilities necessary to service the facility. There are three existing utility corridors that were reserved by the BLM at the time of the land transfer to Boulder City. This includes: the Boulder-McCullough Pass corridor which crosses the tip of the northwest corner of the BCCE; the Boulder-Primm corridor which is 3,000 feet wide and runs approximately six miles through the BCCE; and the Boulder City – Searchlight corridor (also 3,000 feet wide) which runs approximately 7.5 miles through the center of the site (see Map 5). The corridors cover approximately 4,900 acres. Though the BLM does not currently have any applications for utility lines within the BCCE, they are allowed if such applications are received in the future. However, the lines are restricted to the reserved corridors.

e. Mt. Stirling

There is only one power line within this site and it is overlapped by the 2,640 foot wide utility corridor that extends within the entire length of the site (21 miles). The utility corridor covers approximately 6,720 acres. There are no proposals at this time for other utilities. Dr. Marble indicated that Nye County may be interested in obtaining four or five sections of BLM lands within the site just opposite of the Mercury exit along U.S. 95. However, the BLM has not received any formal or informal proposal from Nye County at this time.

2. OHV Activity

OHV activity may result in degradation or loss of habit and the "take" of desert tortoises through harassment or direct mortality. Heavy OHV use often results in an increase in unauthorized roads and trails and can therefore result in habitat fragmentation. An increase in desert tortoise numbers as a result of translocation may result in a higher level of "take" than would otherwise occur. The BLM Las Vegas Field Office has a Sec. 7 programmatic desert tortoise "take" authorization for permitted OHV events. This increase in "take" may exceed that authorized by the USFWS. Air quality issues in Las Vegas Valley and the transfer of public lands for the proposed Ivanpah Airport between Jean and Primm, Nevada have forced BLM and OHV event organizers to consider reducing or eliminating OHV events from these areas in the future. Consequently, the

BLM (Barajas, personal communication 2004[16]) anticipates that the Mt. Stirling and Trout Canyon sites may receive a significant increase in applications for OHV competitive or commercial events in the Mt. Stirling and Trout Canyon sites than what now occurs. This increase in OHV activity could have a negative effect on desert tortoise translocation.

There are currently two permitted OHV events in the Mt. Stirling area - the Dark Side M/C Race and the Mercury M/C Trail Ride. Both are motorcycle events. And only a few competitive OHV events within the Trout Canyon site according to Bruno. The Barstow to Vegas Rally has been routed through the Trout Canyon site via the Trout Canyon road in the past few years. However, this event is a non-speed event for street licensed motorcycles only. According to Barajas, the BLM anticipates an increase in OHV event permits in the future within and around the Trout Canyon site.

Historically there have been up to five OHV competitive events in the LSTS. However, there have not been any events in the past three or four years (Bruno, personal communications 2004). Bruno anticipates that there may be a significant increase in OHV event applications in the future, especially with the recent transfer of the Ivanpah Airport site to Clark County in June 2004.

There are no OHV commercial or competitive events in the BCCE (including BLM lands) or the DNWR. Table 12 compares the type of OHV restrictions for each of the alternative sites.

Table 12: OHV Recreation Activity

Alternative Translocation Site	OHV Use Designation	OHV Activity	Present Number and Kind of OHV Competitive Events	Future Number and Kind of OHV Competitive Events Anticipated
LSTS	OHV use restricted to designated roads & trails	Casual & Competitive Events	Historically up to five annually. None in the past three years.	None, but the BLM anticipate several in the future due to the airport transfer which makes east of I-15 unavailable between Jean and Primm.
Trout Canyon	OHV use restricted to designated roads & trails	Casual Use and OHV competitive speed events allowed.	Barstow to Vegas Rally – non-speed street licensed motorcycles only.	Competitive and speed based events are allowed and expected to increase in the future.
Desert National Wildlife Refuge	Only street legal vehicles are allowed within the refuge and they are restricted to designated roads & trails	Casual Use Only restricted to designated roads and trails.[17]	None	None
BCCE	OHV use restricted to designated roads & trails in BCCE. OHV use	Casual Use Only	None	Though OHV events could be held on the BLM portion of the BCCE, the small size and Nelson Road make it

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[16] Dave Barajas, Supervisor, Recreation Program, BLM Las Vegas Field Office, Las Vegas, Nevada

[17] The Desert National Wildlife Refuge does not allow ATVs or other motorized vehicles that are not street legal to use the refuge.

	limited to existing roads, trails, and dry washes on BLM portion (7,859 acres).			impractical.
Mt. Stirling	OHV use restricted to designated roads and trails.	Casual use and OHV competitive events allowed.	Two motorcycle events occur annually – one speed the other non-speed.	The same events are anticipated in the future. With air quality issues in Las Vegas and Pahrump Valleys, the BLM anticipates more speed events in the future.

3. Livestock Grazing

The only site that receives livestock grazing is Trout Canyon. This allotment (Wheeler Wash allotment) overlaps the northern 1/3 of the translocation site (10,804 acres). Though this allotment has not been active since 1998, it could be re-activated by the permit holder at any time. Livestock grazing was discontinued by the BLM from desert tortoise ACECs because grazing was considered to be incompatible with desert tortoise recovery. The presence of livestock grazing could have a negative impact on habitat quality.

4. Wild Horses & Burros

Two herd management areas (HMA), Johnnie and Wheeler Pass, overlap the entirety of the Trout Canyon and Mt. Stirling sites. The 2004 survey counted 278 horses and 200 burros within the two HMAs. The actual number of these animals within each of the translocation sites is unknown as horses and burros move in and out of the sites. It is presumed that wild horses and burros could have a negative impact on the quality of desert tortoise habitat. It was for this reason that appropriate management levels (AMLs) for several herd management areas (Mormon Mountain and Eldorado HMAs) were set at zero. Table 13 identifies the location of HMAs, the number of horses and burros in the HMAs, and the allowable management level (AML).

Table 13: Wild Horses and Burros

Alternative Translocation Site	Herd Management Area And Class of Animal	No of Horses and/or Burros in HMA	Estimated AML (appropriate management level)	Portion of Site that overlaps HMA
LSTS	None	NA	NA	NA
Trout Canyon	Wheeler Pass HMA Horses & Burros	50 horses 168 burros	see Mt. Stirling below	100 %
Desert National Wildlife Refuge	None	NA	NA	NA
BCCE	El Dorado HMA in BLM portion	0	0	17%
Mt. Stirling	Johnnie & Wheeler Pass HMAs	228 horsed 32 burros	AML not set or estimated for Wheeler Pass. 50 horses & 50 burros estimated AML for Johnnie	100%

5. Mineral Activity

The Desert National Wildlife Refuge and BCCE are withdrawn from the mining laws and therefore are unaffected by mining activity. The BLM portion of the BCCE site, the LSTS, Mt Stirling, and Trout Canyon are all open to locatable minerals, mineral sales and leases. Only the LSTS has mining claims in or along the peripheral of the translocation site. These include 54 mining claims located in the Spring Mountains near the peripheral of the northwest boundary of the LSTS. Most of these lie outside tortoise habitat. There are a few claims along S.R. 161, mostly north of the highway near Jean, Nevada. These claims do not appear to be a serious threat to desert tortoise translocation within the LSTS. Mine development and operation requires a mining plan of operations. These mining plans undergo NEPA compliance and must incorporate reasonable mitigation measures. Because mining operations are localized and require environmental review, it is not anticipated that mining activity will be an issue at any of the translocation sites. Table 14 identifies the potential of each site for minerals, leasables, and oil and gas as identified in the BLM's *Las Vegas Resource Management Plan*. There are no current oil and gas leases, active mining notices, or active mining plans of operations within any of the alternative sites.

Table 14: Estimated Potential for Leasable and Locatable Minerals, and Oil and Gas

Site	Leasable	Saleable	Locatable	Oil & Gas	Remarks
LSTS	N 1/3 Moderate Remaining low	N ½ High S ½ Moderate	Low	Moderate for N 1/3 Low remaining	High for the mountains that form the west boundary
Trout Canyon	Moderate	Moderate	Low	Moderate	
DNWR	NA	NA	NA	NA	
BCCE	NA on Easement Low on BLM	NA on Easement High on BLM portion	NA on Easement Low to High on BLM	NA on easement Low on BLM	
Mt. Stirling	Low	Moderate	Low except for hills that form the west boundary which is high	Low	

SECTION 5

A. TORTOISE HABITAT – SOILS AND ECOLOGICAL SITES

On a very basic level, desert tortoise densities are dependent upon a number of factors including climate, habitat quality and quantity, disease, predation, and human influences. One of the key habitat parameters is soils. Does the soil properties allow for the construction and maintenance of burrows? Is the soil deep enough for burrows? Does the soil support favorable plant communities? The soil and ecological (range) site descriptions given below for each potential translocation site are from the Natural Resources Conservation Service's *Nye County Order III Soil Survey* (2004), the *Clark County Order III Soil Survey* (unpublished, 2004), and *Nevada Ecological Site Descriptions* (2002). The information for Clark County is still in draft form and therefore subject to change. With a few exceptions, only soil descriptions making up 20% or more of a particular translocation site are described.

1. LSTS

The two major soil associations within this site consist of the Weiser-Oldspan-Wechech Association (60%) and the Weiser-Threelakes Association (20%). Most of the valley floor (west of I-15) includes the former. The latter extends eastward from the base of the mountains and comprises more of the site as one progresses south.

Weiser-Oldspan-Wechech Association (313): This soil varies from a well drained very gravelly to extremely gravelly fine sandy loam alluvium derived from limestone and dolomite. The Oldspan member is alluvium derived from limestone and sandstone. This association is found on fan remnants with slopes of 0 to 8 percent. The Wechech member comprises about 24% of this association and has a petrocalcic hardpan at 8 to 14 inches. Elevation ranges from 2,000 to 4,000 feet.

Table 15: Weiser-Oldspan-Wechech Association (313)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation
Weiser	Gravelly Loam 5-7 P.z. R030XB102NV	500 / 350 / 200	white bursage (AMDU2) 25 creosotebush (LADI2) 15 big galleta (PLRI3) 10 Indian ricegrass (ACHY) 5 ephedra (EPHED) 5
Oldspan	Desert Patina R030XB092NV	150 / 75 / 25	creosotebush (LATR2) 95
Wechech	Gravelly Loam 5-7 P.z. R030XB102NV	500 / 350 / 200	white bursage (AMDU2) 25 creosotebush (LADI2) 15 big galleta (PLRI3) 10 Indian ricegrass (ACHY) 5 ephedra (EPHED) 5

Weiser-Threelakes Association (311): This association is a well drained very gravelly to extremely gravelly sandy to fine sandy loam alluvium derived from limestone with 2 to 8 percent slopes between 2,500 feet and 4,000 feet elevation. The Weiser member is the same as above. The Threelakes member has a sodic layer within 40 inches.

Table 16: Weiser-Threelakes Association (311)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation	
Weiser	Gravelly Loam 5-7 P.z. R030XB102NV	500 / 350 / 200	white bursage (AMDU2)	25
			creosotebush (LADI2)	15
			big galleta (PLRI3)	10
			Indian ricegrass (ACHY)	5
			ephedra (EPHED)	5
Threelakes	Calcareous Loam 5-7 P.z. R030XA066NV	350 / 200 / 100	Indian ricegrass (ACHY)	5
			white bursage (AMDU2)	35
			shadscale (ATCO)	25
			creosotebush (LATR2)	15
			wolfberry ((LYCIU)	5
			Torrey ephedra (EPTO)	1

2. Trout Canyon

There are four major soil associations identified within the Trout Canyon site. The most common is the Irongold-Weiser Association which comprises roughly 50% of the area and lies entirely south of the Trout Canyon road. The second most common is the Commski-Lastchance Association which comprises roughly 25% of the site, most of which occurs north of the Trout Canyon road. Protruding into the site from lower elevations in the Pahrump Valley is the Commski-Oldspan-Lastchance Association which covers roughly 10% of the proposed translocation area.

Irongold-Weiser Association (871): This soil is mostly an extremely gravelly loam alluvium derived from limestone and occurs on summits and side slopes of erosional fan remnants with slopes generally 2 to 15 percent. There is a petrocalcic hardpan 10 to 14 inches below the surface. The plant community is dominated by blackbrush near the 4,000 foot elevation and creosote/bursage at the lower elevation.

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Table 17: Irongold-Weiser Association (871)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation
Irongold	Shallow Gravelly Loam 5-7 P.z. R030XB029NV	500 / 350 / 250	blackbrush (CORA) 70 Nevada ephedra (EPNE) 5 big galleta (PLRI3) 5 bush muhly (MUPO2) 5 creosotebush (LADI2) 5 desert needlegrass (ACSP12) 5
Weiser	Gravelly Loam 5-7 P.z. R030XB102NV	500 / 350 / 200	white bursage (AMDU2) 25 creosotebush (LADI2) 15 big galleta (PLRI3) 10 Indian ricegrass (ACHY) 5 ephedra (EPHED) 5

Commski-Lastchance Association (202): This soil type is dominated by a very gravelly fine sandy loam derived from limestone and dolomite with 2 to 8 percent slopes on inset fans. Soils are well drained with moderate permeability. Soils are moderately deep with petrocalcic hardpans 20 to 39 inches below the surface when they do occur (in the Lastchance member of this association).

Table 18: Commski-Lastchance Association (202)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation
Commski	Granitic Fan 5-7 P.z. R030XB058NV	350 / 200 / 100	creosotebush (LADI2) 25 white bursage (AMDU2) 15 Indian ricegrass (ACHY) 5 desert needlegrass (ACSP12) 5 range ratany (KRER) 5
Last Chance	Granitic Fan 5-7 P.z. R030XB058NV	500 / 350 / 200	Indian ricegrass (ACHY) 3 desert needlegrass (ACSP12) 3 creosotebush (LADI2) 30 white bursage (AMDU2) 20 Nevada ephedra (EPNE) 3 range ratany (KRER) 2

Commski-Oldspan-Lastchance Association (203): This soil type is a gravelly fine sandy loam with 2 to 8 percent slopes on fan remnants derived as alluvium from limestone, dolomite, and sandstone. Soils are well drained and moderately permeable. A petrocalcic hardpan 8-14 inches deep exists only in the Lastchance member of this association (20% of the association). The major ecological sites within this soil are described by R030XA007NV - gravelly loam 5-7 and R030XB092NV - desert patina.

Table 19: Commski-Oldspan-Lastchance Association (203)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation
Commski	Gravelly loam 5-7 P.z. R030XA007NV	500 / 350 / 200	big galleta (PLRI3) 15 Indian ricegrass (ACHY) 5 white bursage (AMDU2) 25 creosotebush (LATR2) 15 winterfat (KRLA2) 10 ephedra (EPHED) 5 range ratany (KRER) 5 spiny hopsage (GRSP) 3 spiny mendora (MESP2) 3
Oldspan	Desert Patina R030XB092NV	150 / 75 / 25	creosotebush (LATR2) 95
Last Chance	Gravelly loam 5-7 P.z. R030XA007NV	500 / 350 / 200	big galleta (PLRI3) 15 Indian ricegrass (ACHY) 5 white bursage (AMDU2) 25 creosotebush (LATR2) 15 winterfat (KRLA2) 10 ephedra (EPHED) 5 range ratany (KRER) 5 spiny hopsage (GRSP) 3 spiny mendora (MESP2) 3

3. Desert National Wildlife Refuge

An order three survey was not conducted on refuge lands. However, soil mapping units on adjacent lands obviously extend into the refuge. The gravelly loam Weiser-Wechech Association occurs along U.S. 95 on fan remnants and is probably similar to what occurs on the fan remnants extending from Fossil Ridge and Castle Rock. The valley floor contains the Haymont Association (an alluvial plan), Pahrump-Bluepoint Association, and the Corncreek-Pahrump Association. The extent of these soils within the refuge are unknown, therefore the occurrence and contribution to each of these soils to the translocation site is unknown. With the exception of the Weiser-Wechech Association (or similar type soil), the other associations are not typically considered to be desert tortoise habitat. *Atriplex* species tend to be the dominant shrub with a varying degree distribution and frequency of creosotebush and bursage. However, most of these soil associations occur in the valley floor between U.S. 95 and the alluvial fans that extend from the mountains and hills to the east.

The Weiser-Wechech Association (314) is an extremely gravelly fine sandy loam found on the summits of alluvium fan remnants derived from limestone with two to eight percent slopes. The ecological site (R030XB102NV) is the same as found for in the Weiser and Wechech members found in the LSTS.

The Haymont Association (221) is found just east of U.S. 95 en route to Corn Creek. It is part of a remnant lake plain with silty loam soils on zero to two percent slopes. It is well drained but becomes saline and sodic within 40 inches. The dominant plants include littleleaf saltbush (*Atriplex polycarpa*), fourwing saltbush (*Atriplex canescens*), alkali seepweed (*Suaeda depressa*), Torrey quailbush (*Atriplex lentiformis*), wolfberry (*Lycium*

sp.), white bursage (*Ambrosia dumosa*), creosote bush (*Larrea tridentata*), Indian ricegrass (*Oryzopsis hymenoides*) and big galleta grass (*Hilaria rigida*). This soil association is not considered to be desert tortoise habitat.

The Pahrump-Bluepoint Association (461) is located on fan remnants and alluvial flats derived from lacustrine deposits (old lake beds). This association includes fine sand (Bluepoint) and gravelly loam soils becoming saline at 40 inches. Major plants include shadscale, fourwing saltbush, creosotebush, Indian ricegrass, desert needlegrass, catclaw, honey mesquite, screwbean mesquite, and white bursage. This association and plant community is not indicative of desert tortoise habitat.

The Corn Creek-Badland-Pahrump Association consists of three members. The Corn Creek member consists of an extremely gravelly fine sandy loam on 0-4% slopes. It is found on fan skirts derived from limestone over lacustrine deposits. The plant community is dominated by creosote-bush, white bursage, and shadscale. It is well but with a sodic profile within 40 inches. The Badland member is found on backslopes of relict lakebeds on steep (30-75%) slopes. The Pahrump member makes up an alluvial flat derived from lacustrine deposits. This soil becomes saline within 40 inches. The plant community is similar to that of the Corn Creek member. This soil association is not generally indicative of desert tortoise habitat.

4. BCCE

There are four major soil associations within the BCCE site. These include from the northwest trending southeast: the Tipnat-Highpoint-Grapevine Association (390) (an alluvial/outwash plain); the Searchlight Association (760) (limy 5-7 site); the Tonapah-Arizo Association (limy 5-7); and the Haleburu-Crosgrain Association (limy 5-7 to limy hill 5-7). A fifth association (Nickel-Crosgrain – 211) comprising roughly 2,000 acres occurs in the northeast corner of the BCCE. This association is a limy 5-7 site with the same ecological classification as the Tonaph-Arizo and Searchlight associations. Based upon tortoise transect data, the Tipnat-Highpoint Grapevine Association appears to be poor desert tortoise habitat.

Tipnat-Hypoint-Grapevine Association (390): Soils are gravelly sand loam (Tipnat – 40% of association) to gravelly loamy sand (Hypoint – 25% and Grapevine – 20%) and occur on 0-2% slopes. The Tipnat member consists of mixed alluvium derived from volcanic rock and contains a saline and sodic profile within 40 inches. The Highpoint member is an alluvial plain fan skirt derived from alluvium material. It also contains a sodic profile within 40 inches. The Grapevine member is influenced by gypsiferous materials in mixed alluvium. The dominant plant for all three members is littleleaf saltbush, indicative of relatively high salt soils. The following table describes the ecological site attributes for each of the association members.

Table 20: Tipnat-Hypoint-Grapevine Association (390)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation	
Tipnat	Outwash Plain R030XY046NV	300 / 200 / 50	littleleaf saltbush (ATPO)	30
			creosotebush (LADI2)	15
			Indian ricegrass (ACHY)	5
			white bursage (AMDU2)	5
Highpoint	Alluvial Plain R030XY047NV	350 / 250 / 150	littleleaf saltbush (ATPO)	65
			Indian ricegrass (ACHY)	10
			other shrubs	10
			big galleta (PLRI3)	5
Grapevine	Same as Tipnat			

Searchlight Association (760): The Searchlight Association is an extremely gravelly sandy loam at an elevation of 1,750 to 2,500 feet. It occurs adjacent to the above association in roughly the center of the BCCE. It is a fan remnant derived from a mixed alluvium on 0 to 4 percent slopes.

Table 21: Searchlight Association (760)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation	
Searchlight	Limy 5-7 P.z. R030XB005NV	500 / 300 / 200	white bursage (AMDU2)	40
			creosotebush (LADI2)	20
			Nevada ephedra (EPNE)	5
			big galleta (PLRI3)	5
			range ratany (KRER)	5

Tonapah-Arizo (380): This association extends almost through the entire north/south length of the BCCE site (including BLM) along the eastern 1/3 of the site and turns westward where it extends along most of Nelson Road. It is an extremely gravelly sandy loam (Tonapah member 45%) to very gravelly loamy sand (Arizo member 40%) soil located on fan remnants or inset fans with two to eight percent slopes between 1,800 feet and 2,790 feet elevation. It supports a creosote/bursage community. The Tonapah member is formed from alluvium. Seventy (70) percent of its surface is covered with gravel. The Arizo member is formed from sandy and gravelly alluvium. Surface rock fragments consist of 10% cobble and 40% gravel. Both members of this association have the same ecological site (R030XB005NV) as the Searchlight Association.

Haleburu-Crosgrain-Rock Outcrop Association (750): This association is part of the Eldorado Mountains and forms the western boundary of the BCCE (begins approximately one mile west of the Lake Mead National Recreation Area boundary). The Haleburu member (about 55% of the association) forms the backslopes of mountains with 30 to 50 percent slopes with extremely cobbly sandy loam soil. It is derived from colluvium and/or residuum weathered from andesite. Surface rock material is about 10% stones, 30% cobbles, and 45% gravel. Bedrock is 4 to 10 inches below the surface. The Crosgrain member (about 20% of the association) is located in the footslopes of the mountains with slopes of 8 to 30 percent slopes. Surface rock fragments include about 25% stones, 10% cobbles, and 40% gravel. Parent material is a mixed alluvium. Soil depth is six to 14 inches. Approximately 15% of this association is rock outcrop with 30 to 75% slopes. The plant community is a creosote/bursage community.

Table 22: Haleburu-Crosgrain-Rock Outcrop Association (750)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation	
Haleburu	Limy Hill 5-7 P.z. R030XB001NV	350 / 250 / 100	white bursage (AMDU2)	55
			creosotebush (LATR2)	15
			range ratany (KRER)	5
			big galleta (PLRI3)	5
			fluffgrass (ERPU)	5
			Fremont dalea (PSFR)	1
			Desert alysum (LEFR2)	1
Crosgrain	Limy 5-7 P.z. R030XB005NV	500 / 300 / 200	white bursage (AMDU2)	40
			creosotebush (LADI2)	20
			Nevada ephedra (EPNE)	5
			big galleta (PLRI3)	5
			range ratany (KRER)	5

5. Mt. Stirling

There are five major soil associations at this site. However, the Weiser-Wechech Association covers more than 90% of that portion of the site that lies within Clark County and about 15% of the Nye County portion. Members of this association were also found at the LSTS and Trout Canyon. The Weiser member makes up approximately 70% of this association and the Wechech member about 15%. Both members are extremely gravelly fine sandy loam. Surface fragments are 10% cobbles and 55% gravel in the Weiser and < 1% stones, 3% cobbles, and 70% gravel in the Wechech. Both are found on fan remnants with two to eight percent slopes and derived from limestone and dolomite. One of the main differences is the Wechech has a petrocalcic zone (hardpan) eight to fourteen inches deep.

Table 23: Weiser-Wechech Association

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation	
Weiser and Wechech	Gravelly Loam 5-7 P.z. R030XB102NV	500 / 350 / 200	white bursage (AMDU2)	25
			creosotebush (LADI2)	15
			big galleta (PLRI3)	10
			Indian ricegrass (ACHY)	5
			ephedra (EPHED)	5

The other four soil associations lie entirely within Nye County and make up approximately 15% each of the soils. At least 17 other soil associations make up the remainder of the soils in the Nye County portion of the site. These include "inclusions" and a number of steep hills and ridges that are extensions of the Spring Mountains. The four associations described here include (from east to west); the Canoto Association (2055), the Yurm-Canoto Association (2040), the Canoto Very Gravelly Association (2052), and the Tecopa-Zibata-Rock Outcrop Association (2304). The Canoto member makes up 85% of the Canoto Association, 15% of the Yurm-Canoto Association, and 85% of the Canoto Very Gravelly Association.

Canoto Association (2055): This association is found on fan skirts and insets on fan piedmonts 2,400 to 4,200 feet in elevation and is derived from alluvium mixed rock sources. The Canoto is a very gravelly sandy loam on two to eight percent slopes. Surface rock fragments are 1% stones, 2% cobbles, and 50% gravel. Soils are deep and very gravelly. The plant community is dominated by creosote/bursage.

Table 24: Canoto Association (2055)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation	
Canoto	Limy 5-7 P.z. R030XB005NV	500 / 300 / 200	white bursage (AMDU2)	40
			creosotebush (LADI2)	20
			Nevada ephedra (EPNE)	5
			big galleta (PLRI3)	5
			range ratany (KRER)	5

Yurm-Canoto Association (2040): This association almost splits the Nye County unit of this site in half. It extends from the Spring Mountains almost to U.S. 95 as a fan remnant approximately one mile wide and is derived from limestone and dolomite alluvium. It occurs at an elevation of 3,600 to 4,200 feet on 2 to 8 percent slopes. The Yurm member is a very gravelly sandy loam with a petrocalcic hardpan 10 to 20 inches deep. It makes up 85% of this association. Surface rock fragments consist of 3% cobbles and 70% gravel. The Canoto member is described above. The plant community is dominated by creosote/shadscale.

Table 25: Yurm Member of the Yurm-Canoto Association

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation
Yurm	Barren Fan R030XA047NV	75 / 50 / 25	shadscale (ATCO) 40-60 creosotebush (LATR2) 10-30 other shrubs 5-20 perennial grasses T-10 incl. Indian ricegrass (ACHY) & fluffgrass (ERPU8)

Canoto Very Gravelly Association (2052): The association is a very gravelly sandy loam found on alluvial fans with a 2 to 4 percent slope on elevations of 2,400 to 4,200 feet. Surface rock fragments include 1% stone, 2% cobbles, and 50% gravel. Soils are very deep and very gravelly.

Table 26: Canoto Very Gravelly Association (2052)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation
Canoto Very Gravelly	Limy 5-7 P.z. R030XB005NVNV	500 / 300 / 200	white bursage (AMDU2) 40 creosotebush (LADI2) 20 Nevada ephedra (EPNE) 5 big galleta (PLRI3) 5 range ratany (KRER) 5

Tecopa-Zibate-Rock Outcrop Association (2304): This association is found on hills with 15 to 50% slopes between 3,300 and 4,700 feet elevation. It is located at two large protrusions extending from the Spring Mountains into the western portion of the Nye County unit one to two miles south of U.S. 95, just south/southwest of the Mercury exit. Soils are an extremely gravelly sandy loam. The Tecopa member makes up 50% of this association and the Zibate member makes up 25% with another 15% as rock outcrops. The surface rock fragments include 3% stones, 10% cobbles, and 55% gravel for the Tecopa and 2% stones, 10% cobbles, and 45% gravel for the Zibate. Bedrock is 2 to 10 inches below the surface in the Tecopa member and 4 to 20 inches below the surface in the Zibate member. Parent material for the Tecopa member is a colluvium derived from mixed rocks over residuum weathered from mixed rocks. Parent material for the Zibate member is derived from residuum weathered from volcanic rocks. Creosote/bursage and blackbrush are the dominant plant communities for the Tecopa and Zibate respectively.

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Table 27: Tecopa-Zibate-Rock Outcrop Association (2304)

Soil	Range Site	Total Dry-Weight Production Favorable / Normal / Poor Year	Potential Natural Vegetation
Tecopa	Limy Hill 5-7 P.z. R030XB001NV	350 / 250 / 100	white bursage (AMDU2) 55 creosotebush (LATR2) 15 range ratany (KRER) 5 big galleta (PLRI3) 5 fluffgrass (ERPU) 5 Fremont dalea (PSFR) 1 desert alysum (LEFR2) 1
Zibate	Shallow Gravelly Slope 5-7 P.z. R030XB076NV	300 / 200 / 75	blackbrush (CORA) 120-150 creosotebush (LATR2) 4-10 other shrubs 10-40 incl. Nevada ephedra (EPNE) white bursage (AMDU2) range ratany (KRPA) spiny mendora (MESP2) Anderson's wolfberry (LYAN) Mohave buckwheat (ERFAP) Spanish dagger (YUSC2) big galleta (PLR13) T-16 desert needlegrass (ACSP12) T-16 Indian ricegrass (ACHY) T-16 bush muhly (MUPO2) T-10 other perennial grasses T-10

Table 28[18] describes the suitability of soil in relation to soil properties (texture, rock fragments, and depth) that affect the ability of tortoises to construct and maintain adequate burrows. In addition, soils high in salinity or alkalinity were considered to be unsuitable for tortoises due to the plant community associated with these soils, which include plants with high salt tolerance. These soils are generally associated with valley bottoms in or near Pleistocene lake remnants as found at Corn Creek in the Desert National Wildlife Refuge and Eldorado Valley Dry Lake along the western fringe of the BCCE site and have a pH of 8.5 or higher or a sodic layer within 40 inches of the surface. These soils include the Wechech, Haymont, Pahrump, Bluepoint, Corncreek, Tipnat, Highpoint, Grapevine, Threelakes, and Yurm. Soils with hardpans less than 20 inches below the surface were rated as poorly suited for tortoises because of the inability of tortoises to dig burrows deep enough to provide adequate thermal cover during extreme temperature fluctuations. However, though rated poorly suited, tortoises can still construct and use pallets in these soils. In addition, the soils are intersected by washes that cut through the hardpans and provide "caliche caves" which are commonly used by tortoises. These soils include the Wechech, Irongold, Haleburu, Crosgrain, and Tecopa. The Irongold series was rated well suited for desert tortoise in every category except for hardpan. Likewise the Tecopa series was rated suited to well suited for desert tortoise except for the hardpan. In both cases these soils would probably be of higher value than the rating would suggest. Soils rated as suited to well suited in every category for desert tortoises include the Weiser, Commiski, Last Chance , Searchlight, Tonapah, Arizo, Canoto, and Zibate. The Last Chance and Canoto both ranked well suited in all categories.

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[18] The values used in Table 28 were developed by the Natural Resources Conservation Service during their soil mapping of Clark County in the 1990s (see **Appendix A**).

Table 29 identifies the soil associations, and their suitability for desert tortoises, with the alternative translocation sites. The percentage a particular soil association makes up a site is an estimate only. In the case of the Desert National Wildlife Refuge, soil mapping was not conducted on the refuge. Therefore, the soil associations identified were extrapolated from adjacent soil information by extending the soil mapping units across the refuge boundary line. These soil associations include the Haymont, Pahrump-Bluepoint, Corncreek-Badlands-Pahrump, and Tipnat-Hypoint-Grapevine. All of these soils are characterized as being highly saline or sodic and occur in the valley plain along U.S. 95 where they extend into the western peripheral of the refuge. The Weiser-Wechech association is presumed to occur along the lower slopes of Sheep Mountain and the Las Vegas Range based upon soils associated with the mountain slopes west of U.S. 95. The Weiser member makes up 70% of this soil association and is rated as suitable for desert tortoise while the Wechech member makes up 15% of the association and is rated as unsuitable due to high alkalinity. It is estimated that roughly 50% of the area identified for potential translocation within the refuge is made up of this association or similar soils. The remaining lands are of questionable value for desert tortoises. As Table 29 indicates, the LSTS appears to have the best desert tortoise habitat in relation to soils than any of the alternative sites with 80% of the site consisting of suitable soils. However, given that soils used in this evaluation generally made up 20% or more of the site, other less common soils that occur in the site may also be suitable for desert tortoises. The northwest corner of the BCCE site consists of the Tipnat-Hypoint-Grapevine soil association. This soil is very sodic and forms the upper reaches of the Eldorado Dry Lake and consequently considered unsuitable for desert tortoises. However, it only comprises approximately 15% of the site. The remaining soils were rated as poorly suited (25% of site along the eastern boundary of the site) to suitable (50% of the site). Fifty percent (50%) of the Trout Canyon site was rated as poorly suitable for desert tortoises due to a hardpan 10 to 14 inches below the surface associated with the Irongold member of the Irongold-Weiser association. Twenty-five percent (25%) of Trout Canyon consisted of the Commiski-Oldspan-Lastchance association which rated as suitable. Even with the hardpan, the Irongold series is probably better habitat than rated due to incised washes that traverse the site. Approximately 75% of the Mt. Stirling site was rated as having suitable soils for the desert tortoise. Most of this occurred in Clark County. Approximately 30% of the site was rated as not suitable or poorly suitable, most of which occurred in Nye County (55% of Nye County portion of site).

Table 28: Desert Tortoise Habitat Evaluation by Soil Series

	Soil Texture[19]			**Rock Fragments**						**Depth to Cemented, gypsiferous layer, or bedrock**			**Alkalinity**
				Gravel & Pebbles			**Stones & Cobbles**						
Soil Series	SL, FSL. VFSL, L. SIL, SI	COSL, CL, SCL, SICL, LVFS, LS, LFS	SIC, C, SC, S, FS, VFS, LCOS	< 50%	50 – 75%	> 75%	<10%	10 - 25%	> 25%	No Hardpan or > 20"	10 – 20"	< 10"	pH 8.5 or greater Soil very Saline or Sodic within 40" of surface
	Well Suited	Suited	Poorly Suited	Well Suited	Suited	Poorly Suited	Well Suited	Suited	Poorly Suited	Well Suited	Suited	Poorly Suited	Not Suited
Weiser	X				X			X		X			
Oldspan	X												
Wechech	X				X		X					X	X - 8.6
Threelakes			X							X			X - Sodic
Irongold	X			X			X					X	
Commski		X			X		X			X			
Last Chance	X			X			X			X			
Haymont	X			X			X			X			X – 8.8
Pahrump	X			X			X			X			X - Sodic
Bluepoint		X		X			X			X			X - Sodic
Corncreek	X			X			X			X			X - Sodic
Tipnat	X			X			X			X			X – Sodic & Saline
Hypoint		X		X			X			X			X – Sodic
Grapevine		X		X			X			X			X - Saline
Searchlight	X				X					X			
Tonapah	X				X					X			
Arizo	X				X			X		X			
Haleburu	X			X					X			X	
Crosgrain	X			X					X			X	
Canoto	X			X			X			X			
Yurm	X			X			X				X		X – 8.5
Canoto Very Gravelly			X		X		X						
Tecopa	X				X		X					X	
Zibate	X				X			X			X		

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[19] SL=sandy loam, FSL = fine sandy loam, VFSL= very fine sandy loam, L = loam, SIL = silt loam, SI = silt, COSL = coarse sandy loam, CL = clay loam, SCL = sandy clay loam, SICL = silty clay loam, LVFS = loamy very fine sand, LS = loamy sand, LFS = loamy fine sand, SIC = silty clay, C = clay, SC = sandy clay, S = sand, FS = fine sand, VFS = very fine sand, LCOS = loamy course sand.

Table 29: Desert Tortoise Habitat Evaluation by Soil Association

Suitable Soil Association (Soil Association No) % Series Makes up of Soil Association	Poorly Suitable Soil Association % of each Series	Not Suitable Soil Association % of each Series	Translocation Site % of Site	Remarks
Weiser-Oldspan-Wechech (313) 35 – 30 - 20			LSTS 60% of Site	The Weiser series ranked suited to well-suited. The Wechech series ranked poor to non-suitable due to shallow soil and high alkalinity. The Oldspan appeared suitable but insufficient data.
Weiser-Threelakes (311) 50 - 43			LSTS 20% of Site	Though the Threelakes series is rated as unsuitable due to a sodic layer, the Weiser series makes up 50% of this association and is rated as suited to well-suited.
	Irongold-Weiser 70 - 15		Trout Canyon 50% of Site	The Irongold (70%) series has a hardpan 10 to 14 inches below the surface. The Weiser series only makes up 15% of this soil association.
Commski-Oldspan-Lastchance (203) 35 – 30 - 20			Trout Canyon 25% of Site	The Commski series ranked suited to well-suited and the Last Chance series ranked well-suited in all categories.
Weiser-Wechech (314) 70 - 15			Desert National Wildlife Refuge Unknown Approximately 50%	The Weiser series ranked suitable to well-suitable. Though the Wechech ranked poorly, 70% of this association is Weiser. The DNWR was not surveyed for soils. It is presumed that this soil association may occur on the alluvial fans that extend from the mountains to the east.
		Haymont (221)	Desert National Wildlife Refuge Unknown	This soil is located near Corn Creek and is a remnant old lake bed. It has a very high saline and sodic layer.
		Pahrump-Bluepoint (461)	Desert National Wildlife Refuge Unknown	The soil is located at or near Corn Creek and is derived from old lake bed deposits. The soil is very sodic.
		Corncreek-Badland-Pahrump	Desert National Wildlife Refuge Unknown	Similar situation to the Pahrump-Bluepoint Association. Soil is very saline.
		Tipnat-Hypoint-Grapevine (390) 40 – 25 - 20	BCCE 15% of Site	This soil association rated suited to well-suited in every category except that all three soil series have high saline or sodic levels.
Searchlight (760) 85			BCCE 25% of Site	This association ranked suitable to well-suitable.
Tonapah-Arizo (380)			BCCE 25% of Site	This association ranked suitable to well-suitable. The soil tends to be very gravelly.
	Haleburu-Crosgrain-Rock Outcrop (750)		BCCE 25% of Site	This association is high in stone and cobbles with very shallow soil. It is associated with the Eldorado Mountains.
Weiser-Wechech (314) 70 - 15			Mt. Stirling 50% of Site	The Weiser series makes up the bulk of this association.
Canoto (2055) 85			Mt. Stirling 10% of Site	This association ranked well-suited in every category. It occurs immediately west of the Weiser-Wechech Association a few miles east of the Mercury exit on U.S. 95.
		Yurm-Canoto (2040) 85-10	Mt. Stirling 10% of Site	Though the Canoto series is well suited for tortoises, the Yurm series comprises 85% of this association and has very shallow soils and high alkalinity.
	Canoto Very Gravelly (2052) 85		Mt. Stirling 10% of Site	This association ranked lower due to a very coarse sandy soil below the soil surface.
	Tecopa-Zibate-Rock Outcrop (2304) 50 – 25 - 15		Mt. Stirling 10% of Site	The main downgrade of this association is the shallow soils.

B. COMPARATIVE ANALYSIS OF THE ALTERNATIVE SITES

To provide a value of relative importance for each alternative translocation site, each site was given points based upon habitat quality (category 1), habitat size (category 2), whether there were livestock or wild horse and burro use (category 3 and 4), the types of OHV use allowed (category 5), the extent of existing and future right-of-grants likely to be issued (category 6), potential for translocated tortoises to mix with resident tortoises outside the translocation site (category 7), and needed infrastructure such as fencing to keep tortoises off highways or from readily leaving the translocation site (category 8). Habitat quality was based upon soil data obtained from the Natural Resources Conservation Service and the NRCS's soil evaluation criteria for desert tortoises (see Tables 28 and 29). Points were not given for Category 2 (habitat size) because all four sites met minimum qualifications as determined by Clark County's desert tortoise working group (made of up personnel from the USFWS, land management agencies, Clark County, UNR, NDOW, and others). Likewise, points were not given for category 7 (mixing) as the working group believed that some tortoises could and would eventually find their way outside all of the translocation sites.

All of the sites meet minimal requirements for use as a desert tortoise translocation site. Therefore, the evaluation points should not necessarily rule out any particular site. The evaluation points do provide a comparison between sites and may identify particular weaknesses with a particular site. These points may ultimately be changed as conditions change. For example, if the livestock operator at the Trout Canyon site decided to voluntarily sell his allotment to Clark County, and the Clark County through their Desert Conservation Program agreed to buy the allotment, the points for category 3 in Trout Canyon would go from 0 to 3. Table 30 shows the points given for each category for each translocation site.

Table 30: Evaluation Criteria and Points Awarded

	Trout Canyon	Desert National Wildlife Refuge	BCCE	Mt. Stirling
1. Habitat	3	1	5	5
2. Size	All meet minimal size			
3. Livestock Grazing	0	3	3	3
4. Wild Horses & Burros	0	3	3	0
5. OHV Activity	0	5	3	0
6. Realty Activity	0	5	3	0
7 Mixing	In all cases some desert tortoises will make it outside the translocation site			
8. Needed Infrastructure	0	0	5	2
Total Points	3	17	22	10

Category 1 - Habitat: Soil information in Tables 28 and 29 were used as the basis for establishing the relative habitat value for each site. Three classes were developed for soils; suitable, poorly suitable, and not suitable. The percentage of suitable and poorly suitable soils within each potential translocation site was used for establishing a point value between 1 and 5 for this category. Five points were given when at least 75% of the translocation site is rated as having poorly suitable to suitable soils with at least 50% rated as suitable soils. Three points were given when poorly suitable and suitable soils combined equal at least 75% of the site but

suitable soils comprise less than 50% of the site.. Only one point is given when no more than 50% of the site contains poorly suitable to suitable soils combined.

Category 2 - Size: The desert tortoise translocation working group indicated that any potential translocation site should be at least 23,000 acres. All four sites contain 23,000 acres or more, therefore no points were given for this category.

Category 3 – Livestock Grazing: Three points are given if there is no livestock grazing. No points are given if there is livestock grazing.

Category 4 – Wild Horse & Burro Use: Three points are given if there is no wild horse and burros. No points are given if there is wild horse and burro use within the translocation site.

Category 5 – OHV: Five points are given if there is no organized competitive OHV speed events allowed. Three points are given if there is no speed events allowed but organized non-speed events are allowed. Zero points are given if organized speed events are allowed.

Category 6 – Realty Activity: Five points are given if there is little to no ongoing or anticipated land uses occurring or likely to occur in the foreseeable future (next 30 years) such as rights-of-way grants for power lines, gas lines, etc. Three points are given if rights-of-way may be granted but they are limited to existing corridors or unlikely. Zero points is given if the site is subject to rights-of-way grants outside corridors, and based upon recent history or anticipated demands, such rights-of-way are likely to be granted.

Category 7 – Mixing: It is expected that even with fencing in place, some desert tortoises will make it outside the translocation site. This is particularly true of the BCCE where tortoises are free to move easterly into the Lake Mead National Recreation Area. This habitat is poorly suited for desert tortoises due to the steep slopes and very shallow soils. Because the BCCE site overlaps designated Critical Desert Tortoise Habitat, the USFWS will require that only wild disease-free tortoises that are genetically similar be translocated to this site if it is selected to be used.

Category 8 – Infrastructure Needs: This category includes costs associated with fence and cattle guard construction or retrofitting existing fences. The costs for each alternative translocation site was computed as detailed below. New fence construction was estimated at $30,000.00 per mile. Retrofitting existing fences was estimated to cost $10,000 per mile. Cattle guard installation was estimated to cost $5,000.00 each. The USFWS has already received $600,000 to fence approximately 20 miles of the DNWR boundary. It is anticipated that they will continue to request funding to construct a boundary fence along the remainder of their boundary with BLM/Private land due to urban expansion issues. Therefore, the cost estimates for the DNWR is based upon the HCP program contributing funds to add mesh wire along the fence to make them tortoise proof. Cattle guard installation would be included in the Service's fence construction costs. Approximately four miles of new fence unrelated to urban issues may be needed along the north boundary of the translocation area on the refuge to keep tortoises off the U.S. Air Force's Nevada Test and Training Range. Approximately eight miles of new fence

is needed along the north boundary of the BCCE. However, it is anticipated that this fence may be constructed as part of the mitigation for the Boulder City bypass project.

Table 31: Infrastructure Needs and Costs

Site	Miles of New Fence @ $30,000/mile	Miles of Retrofitting Existing Fences @ $10,000/mile	New Cattle Guard Installation @ $5,000/unit	Total Costs
Trout Canyon	20 mi. = $600,000	0	6 units = $30,000	$630,000
DNWR	4 mi. = $120,000	36 mi. = $360,000	0	$480,000
BCCE	0.5 mi. = $15,000	0	0	$15,000
Mt. Stirling	3 mi. = $90,000	21 mi. = $210,000	4 = $20,000	$320,000

Five points are given where costs are less than $100,000 for infrastructure needs. Two points are given where costs are more than $100,000 but less than $350,000 and zero points for costs more than $350,000.

Based upon the points given for each translocation site, it appears that the BCCE and Desert National Wildlife Refuge would be the top two choices for translocation. However, the County and regulatory agencies are not under any obligation to select any particular site, even if it may have scored the highest points. For example, Nye County is now or soon to be working on an habitat conservation plan for desert tortoises in the County. They will more than likely have a need, like Clark County, to translocate desert tortoises. For this reason, the agencies may decide to select Trout Canyon or Mt. Stirling. Or, the agencies may decide to use all four of the alternative translocation sites. The evaluation points given in Table 30 should be kept in perspective. It is only a tool that compares the on-the-ground situation. The responsible agencies will make their selections based upon a variety of issues including the potential impacts of translocation on multiple uses as described in the first portion of this environmental assessment.

SECTION 6

CONSULTATION AND COORDINATION

The following persons were consulted and coordinated with:

Mr. Lewis Wallenmeyer	HCP Coordinator, Desert Conservation Program, Clark County
Ms Christina Gibson	Mgmt Analyst II, Desert Conservation Program, Clark County
Mr. Michael Burroughs	Wildlife Biologist, Las Vegas Field Office, USFWS
Ms. Jeri Krueger	Wildlife Biologist, Las Vegas Field Office, USFWS
Mr. Phil Medica	Wildlife Biologist, Biological Resources, USGS
Ms. Kristen Murphy	Wildlife Biologist, Las Vegas Field Office, BLM
Ms. Christina Nelson	Botanist, Las Vegas Field Office, BLM
Mr. Brad Hardenbrook	Habitat Specialist, Nevada Department of Wildlife
Dr. Ron Marlow	University of Nevada, Reno
Ms. Amy Sprunger-Allworth	Refuge Manager, Desert National Wildlife Refuge
Mr. Bruce Zeller	Wildlife Biologist, Desert National Wildlife Refuge
Mr. Doug Merkler	Soil Scientist, Las Vegas, NRCS
Ms. Karen Harville	Humbolt-Toiyabe National Forest, USFS
Mr. Mark Trinko	OHV Representative, Clark County HCP I&M Committee
Mr. Steve Ferrand	Searchlight Town Board and Clark County HCP I&M Committee

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Appendix A

Soil Suitability for burrowing by Desert Tortoise

The soil is interpreted as a habitat component according to its potential to be used by desert tortoise in excavating burrows. Burrows are considered a necessary part of specific local habitat. The guide to interpretive criteria is intended to provide guidelines in the identification and selection of sites that have the most potential for preserving, maintaining, or increasing local populations of desert tortoise.

This interpretation guide is of a more general nature. It is designed to be used in the planning process to identify areas of concern prior to the application of conservation practices. Based upon the wildlife objectives, these areas can be avoided or practices can be adjusted to minimize damage to the burrow habitat. The guide does not take into account climate or soil temperature that may influence the presence or distribution patterns of a species. The presence or absence of a species is determined at the local level.

The interpretations provide suitability ratings and identify the dominant soil characteristics that influence the suitability of the site for burrowing by desert tortoise. This information allows the user to plan and develop alternatives in site selection by identifying the site that best meets the wildlife habitat requirements.

Soils that are rated WELL SUITED have no restrictions to use and are favorable for burrowing by desert tortoise. Colonization and population densities may be above average if other habitat factors are not limiting. A SUITED rating implies that the site is suitable as habitat to burrowing by desert tortoise and that some restrictive features may limit the use of the site. Colonization and population densities may be average for the area if the other habitat requirements are met. A POORLY SUITED rating indicates that the soil characteristics are such that they may limit establishment, maintenance, or use of the site by burrowing species. Colonization and population densities may be restricted in the are due to the limiting factors even though all of the other species habitat requirements are met.

The final identification and selection of a site suitable for burrowing by desert tortoise is determined by the limitation of the soil as it influences excavation, maintenance, and preservation of the burrows. The guide identifies the soil restricting features that will have the most effect on habitat.

The assumptions made about the rating criteria listed in the table are as follows:

1—Flooding from stream overflow adversely affects burrowing suitability. In areas subject to flooding, the burrowing reptiles are evicted, species are drowned, and the walls of the burrows may collapse or become filled with debris. Any effort of the animals to return to the site is delayed until the floodwater has receded and the soils have dried sufficiently to allow renewed activity.

2 – Pounding or standing water adversely affects burrowing species.

3 – Bedrock adversely affects the potential depth of excavation by burrowing species. The layers are either too hard or too dense for the species to excavate.

4 – Highly gypsiferous layers are thought to adversely affect the potential depth of

excavation by burrowing species. The layers may be too dense for the species to excavate or may be undesirable due to the high amounts of gypsum crystals.
5 – Cemented layers adversely affect the potential depth of excavation by burrowing species. The layers are either too hard or too dense for the species to excavate.

6 – A seasonal high water table can affect burrowing species, restrict burrowing, and possibly cause drowning when the water table returns. Caving or tunnel collapse may be a problem, especially in those parts of the soil affected by the capillary fringe.

7a – Sandy layers are soft and loose. Burrow excavation and maintenance are problems due to reduced sidewall stability and the tendency for collapse.

7b --Clayey layers are slippery and sticky when wet, are slow to dry, and, when dry, are usually hard. They affect the ability of the burrowing species to excavate.

7c – A high content of organic matter affects maintenance of the burrows due to reduced sidewall stability and the tendency to collapse. Highly fiberous organic materials are difficult to burrow.

8a and 8b – High concentrations of rock fragments adversely affect the excavation of soil by burrowing species. The physical effort to dislodge or transport the rock fragments from the burrow may be beyond the abilities of many species.

9 – Dense layers adversely affect the potential depth of excavation by burrowing species. The layers are either too hard or too dense for the species to excavate.

Rating Criteria – Suitability for Burrowing by Desert Tortoise

NRCS Nevada Guide - April 1995

Ranking	Rating Criteria or Property	Well Suited	Suited	Poorly Suited	Restrictive Feature Description
1	Flooding	None	Rare	Occasional or Frequent	Flooding
2	Ponding	None	--	Any entry	Ponding
3	Depth to bedrock (hard or soft)	More than 20 inches	Between 10 and 20 inches	Less than 10 inches	Depth to rock
4	Depth to gypsiferous layer (≥ 15 percent gypsum)	More than 20 inches	Between 10 and 20 inches	Less than 10 inches	Excess gypsum
5	Depth to cemented pan	More than 20 inches	Between 10 and 20 inches	Less than 10 inches	Cemented pan
6	Depth to high water table (perched or apparent)	More than 3 feet	Between 1.5 and 3 feet	Less than 1.5 feet	Wetness
7a	USDA Texture (thickest layer between 0 and 30 inches)	VFSL, L, SIL, SI, SL, FSL	COSL, LVFS, LS, LFS	COS, S, FS, VFS, LCOS	Too sandy
7b	USDA Texture (thickest layer between 0 and 30 inches)	---	SICL, CL, SCL	SIC, C, SC	Too clayey
7c	USDA Texture (thickest layer between 0 and 20 inches)	---	HPM, MPM, MUCK, MPT	PEAT, SPM	Excess humus
8a	Stones and cobbles (Percent by weight, thickest layer between 0 and 30 inches)	Less than 10 percent	Between 10 and 25 percent	More than 25 percent	Large stones
8b	Gravel (Percent by weight, thickest layer between 0 and 30 inches*	Less than 50 percent	Between 50 and 75 percent	More than 75 percent	Too gravelly
9	Depth to dense layer (Bulk density > 1.8)	More than 20 inches	Between 10 and 20 inches	Less than 10 inches	Dense layer

* Rating 8b: rate on total of all rock fragments, including cobbles and stones

Areas with incised drainage channels or with a high volume of surface stones and boulders often provide opportunistic burrows below boulders and stones or below exposed hardpans. Field examination is needed to determine the abundance of opportunistic burrows.

Appendix B

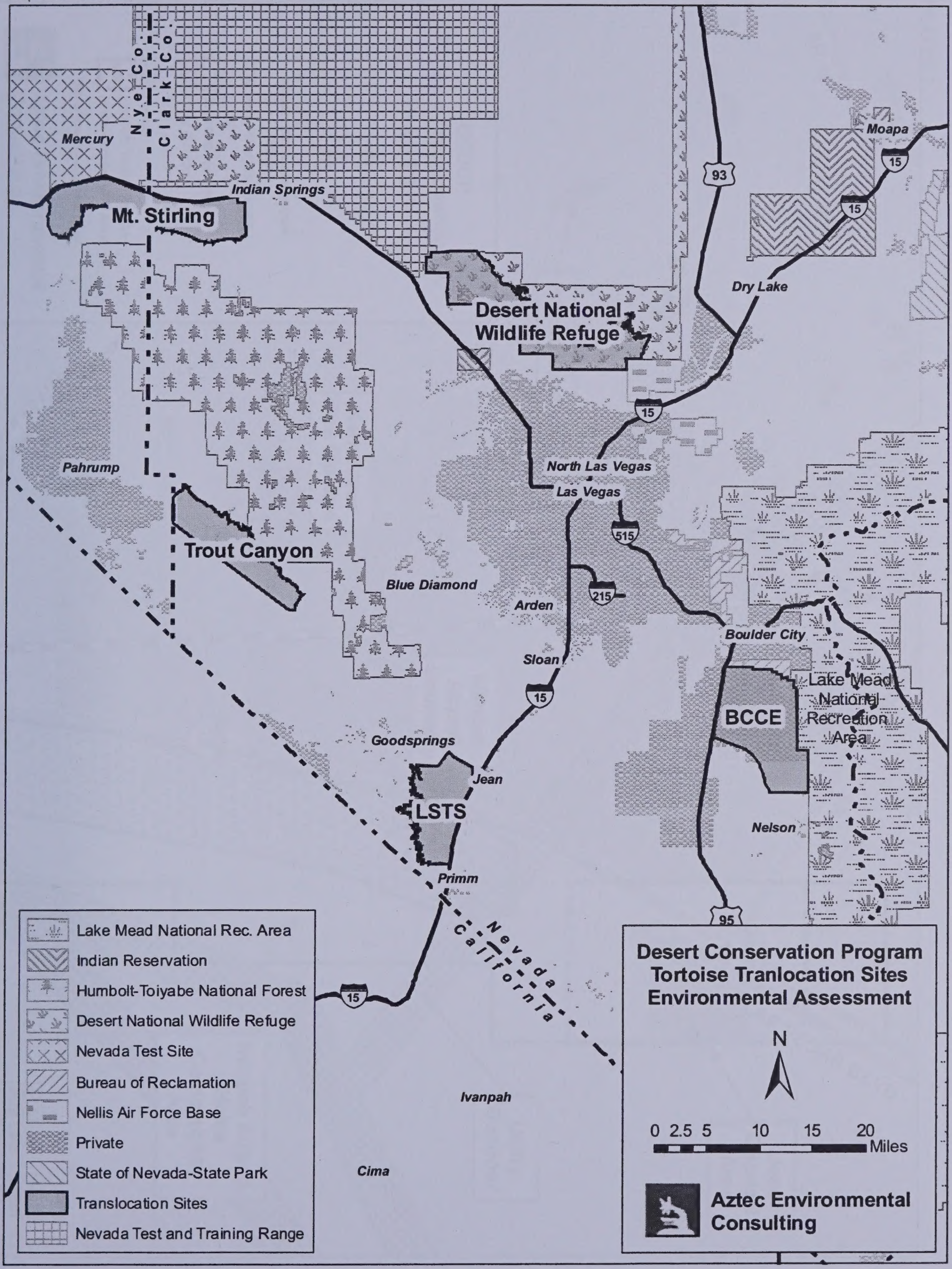
Potential Translocation Sites Legal Descriptions

(Potential Translocation Sites are located in all are portions of the following sections.)

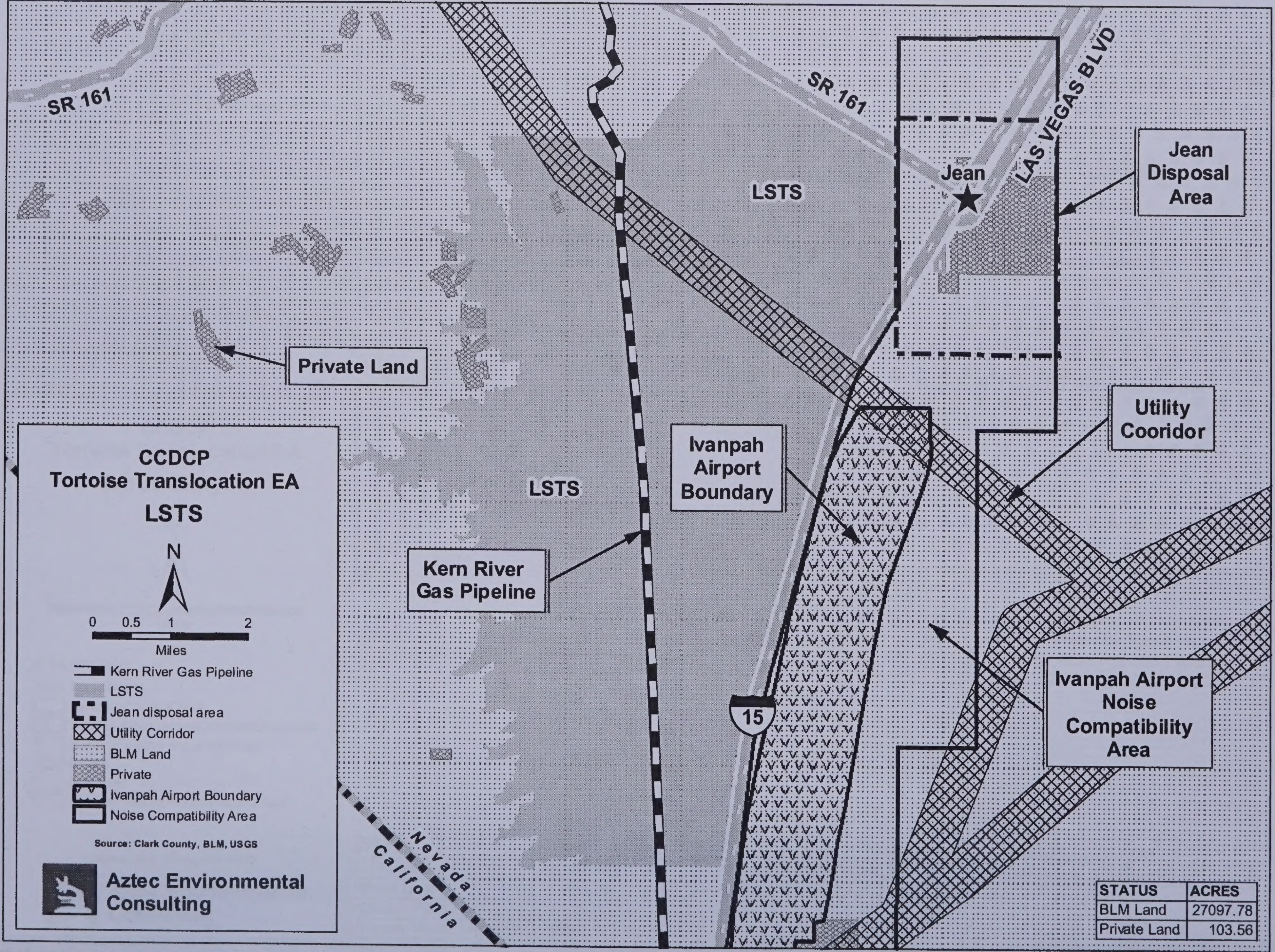
Site	Township	Range	Sections
Large Scale Translocation Site	25S	58E	11, 12, 13, 14, 23, 24, 25, 26, 34, 35, 36
	25S	59E	3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33, 34
	26S	58E	1, 2, 11, 12, 13, 14, 23, 24, 25, 26
	26S	59E	4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 29, 30
Boulder City Conservation Easement	23S	63E	23, 24, 25, 26, 35, 36
	23S	63 1/2E	25, 36
	23S	64E	30, 31, 32, 33, 34
	23 1/2S	64E	31, 32, 33, 34, 35
	24S	63E	1, 2, 3, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26, 27, 35, 36
	24S	64E	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35
	25S	64E	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24
Desert National Wildlife Refuge	17S	59E	7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36
	17S	60E	18, 19, 27, 28, 29, 30, 31, 32, 33, 34, 35
	18S	60E	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 22, 23, 24, 25, 26, 27
	18S	61E	11, 12, 13, 14, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	18S	62E	5, 6, 7, 8, 16, 17, 18, 19, 20, 21, 28, 29, 30, 31
Mount Stirling	15S	53E	35, 36
	15S	54E	31
	16S	53E	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 28, 29, 30, 31, 32
	16S	54E	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26

	16S	55E	7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	16S	55 1/2E	14, 23, 26, 35
	16S	52E	12, 13, 24, 25
Trout Canyon	20S	55E	31, 32
	21S	55E	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 34, 35, 36
	21S	56E	18, 19, 29, 30, 31, 32
	22S	55E	1,2
	22S	56E	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26
	22S	57E	19

Map 1 Site Location



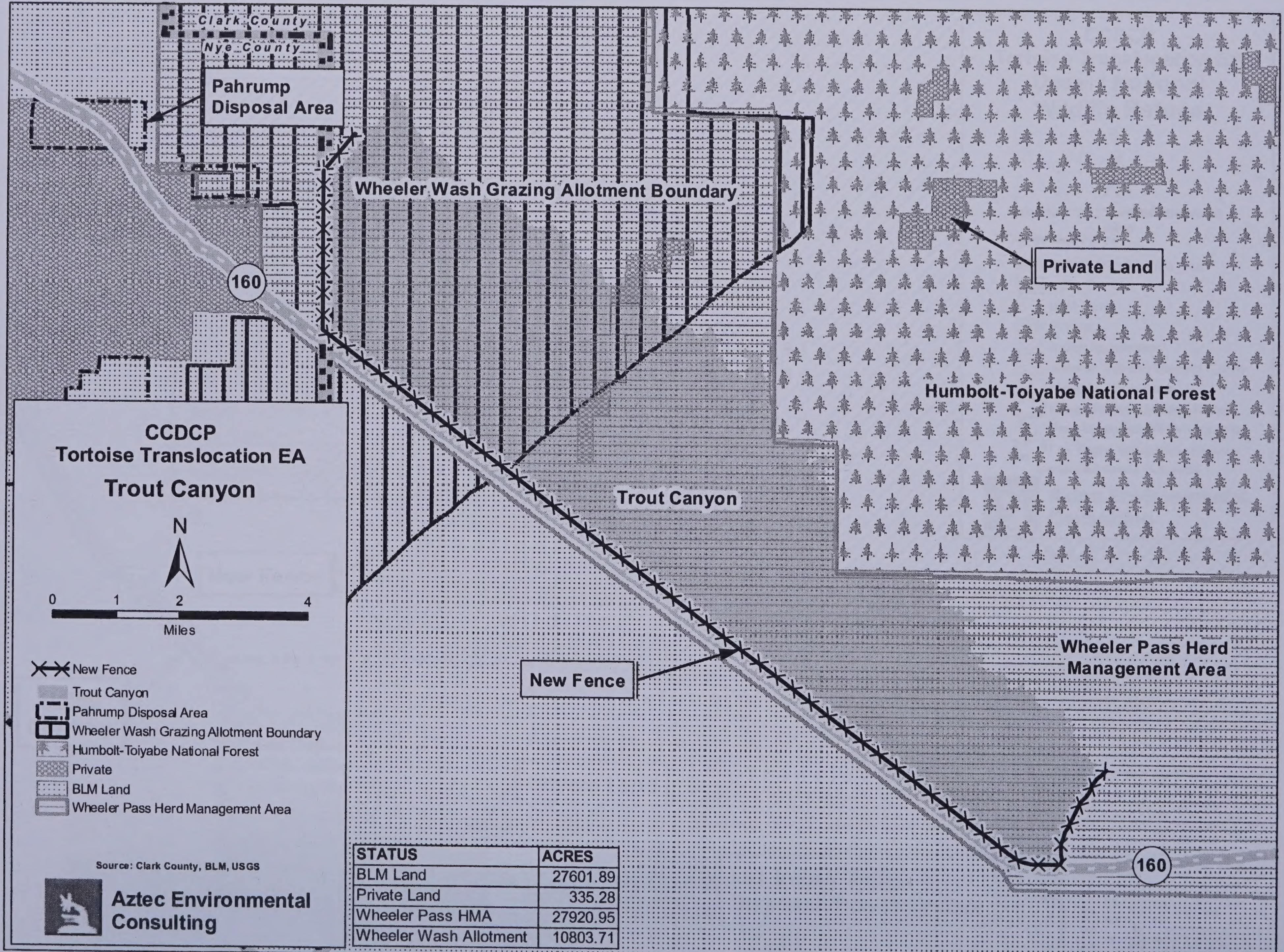
MAP 2 LSTS



Source: Clark County, BLM, USGS

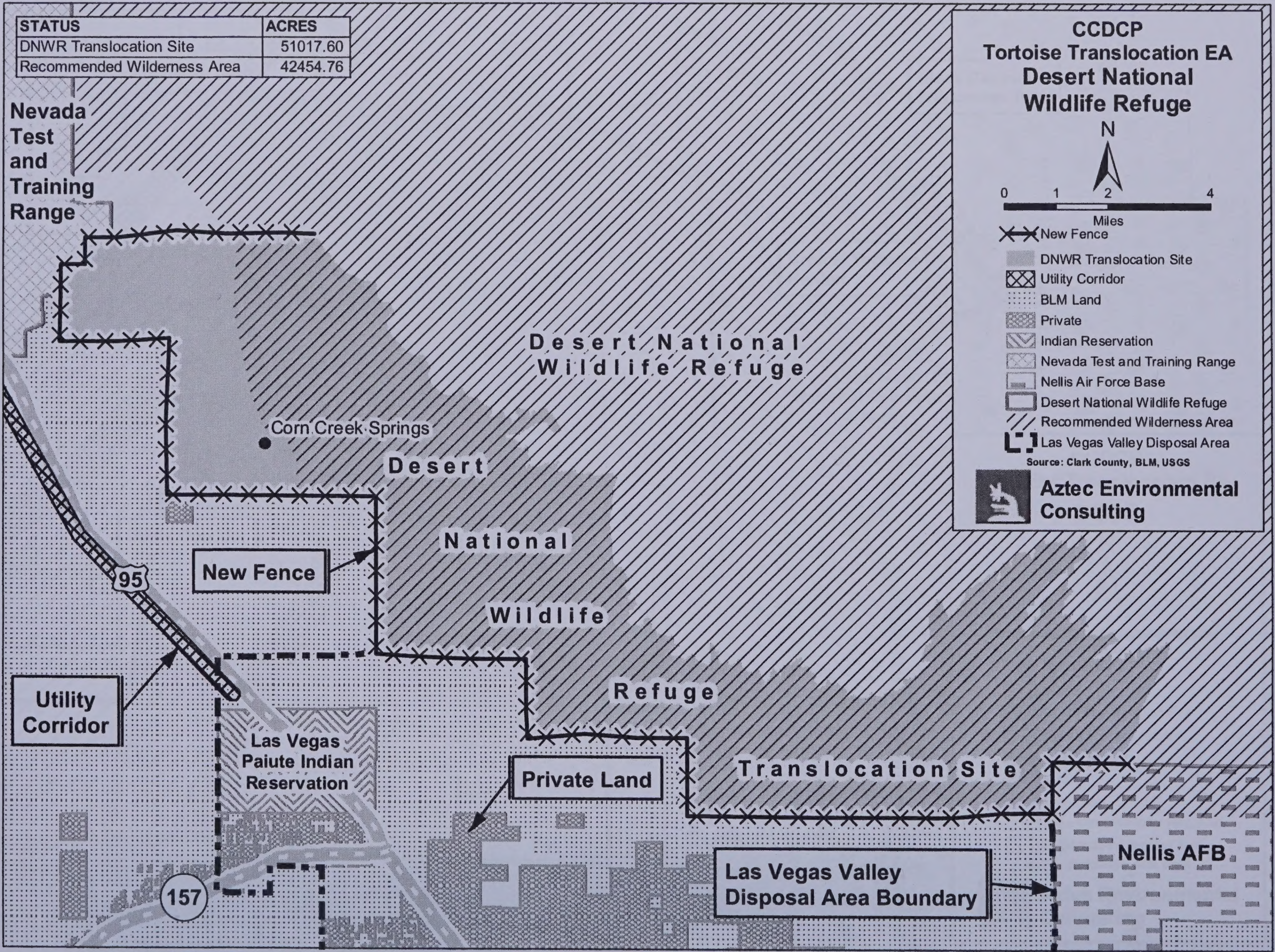
STATUS	ACRES
BLM Land	27097.78
Private Land	103.56

MAP 3 Trout Canyon


Clark County
Nye County
Pahrump Disposal Area
Wheeler Wash Grazing Allotment Boundary
Private Land
160
Humbolt-Toiyabe National Forest
Trout Canyon
Wheeler Pass Herd Management Area
New Fence
160
CCDCP
Tortoise Translocation EA
Trout Canyon
N
0
1
2
4
Miles
New Fence
Trout Canyon
Pahrump Disposal Area
Wheeler Wash Grazing Allotment Boundary
Humbolt-Toiyabe National Forest
Private
BLM Land
Wheeler Pass Herd Management Area
Source: Clark County, BLM, USGS
Aztec Environmental Consulting

STATUS	ACRES
BLM Land	27601.89
Private Land	335.28
Wheeler Pass HMA	27920.95
Wheeler Wash Allotment	10803.71

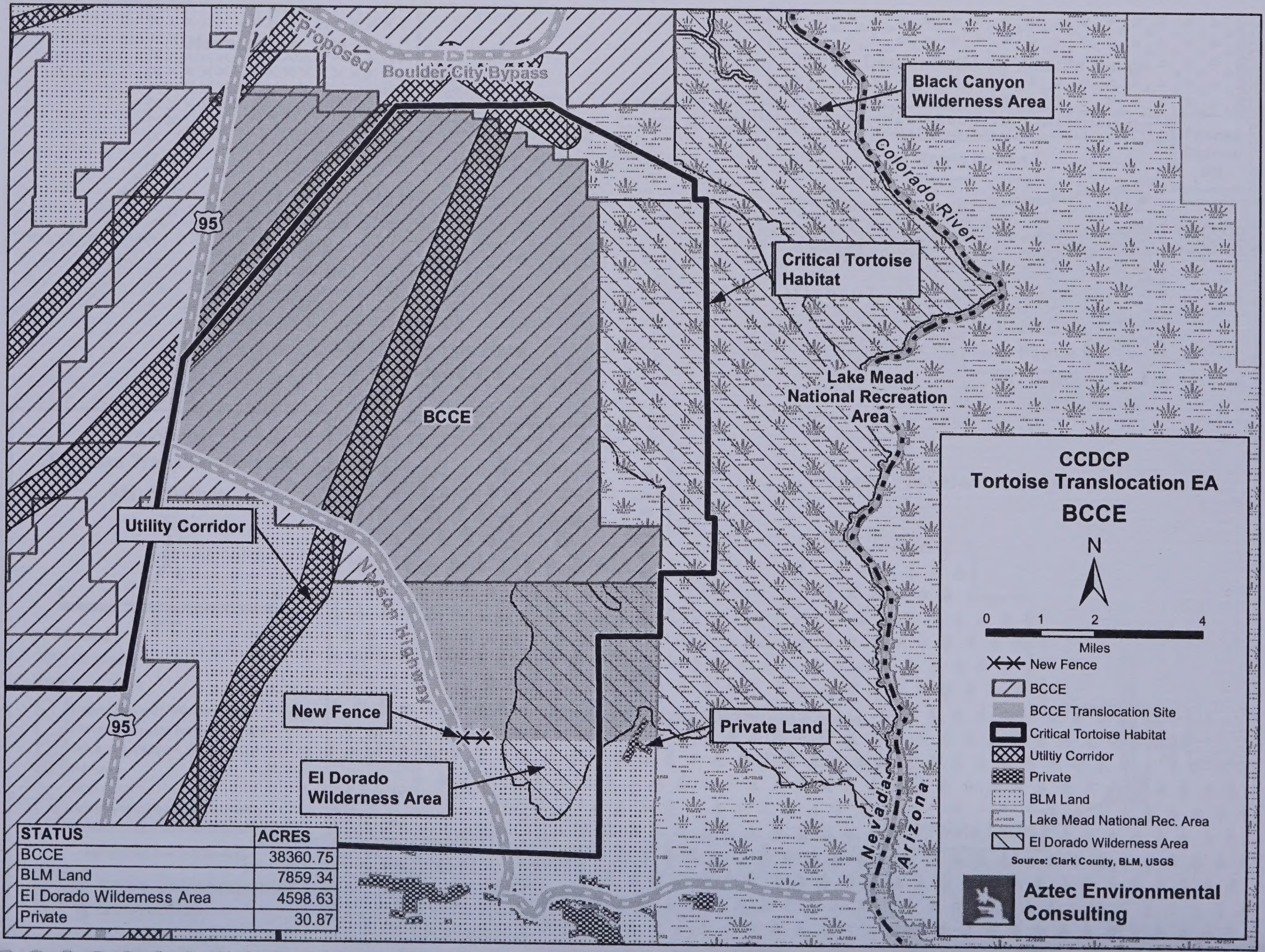
MAP 4 Desert National Wildlife Refuge



STATUS	ACRES
DNWR Translocation Site	51017.60
Recommended Wilderness Area	42454.76

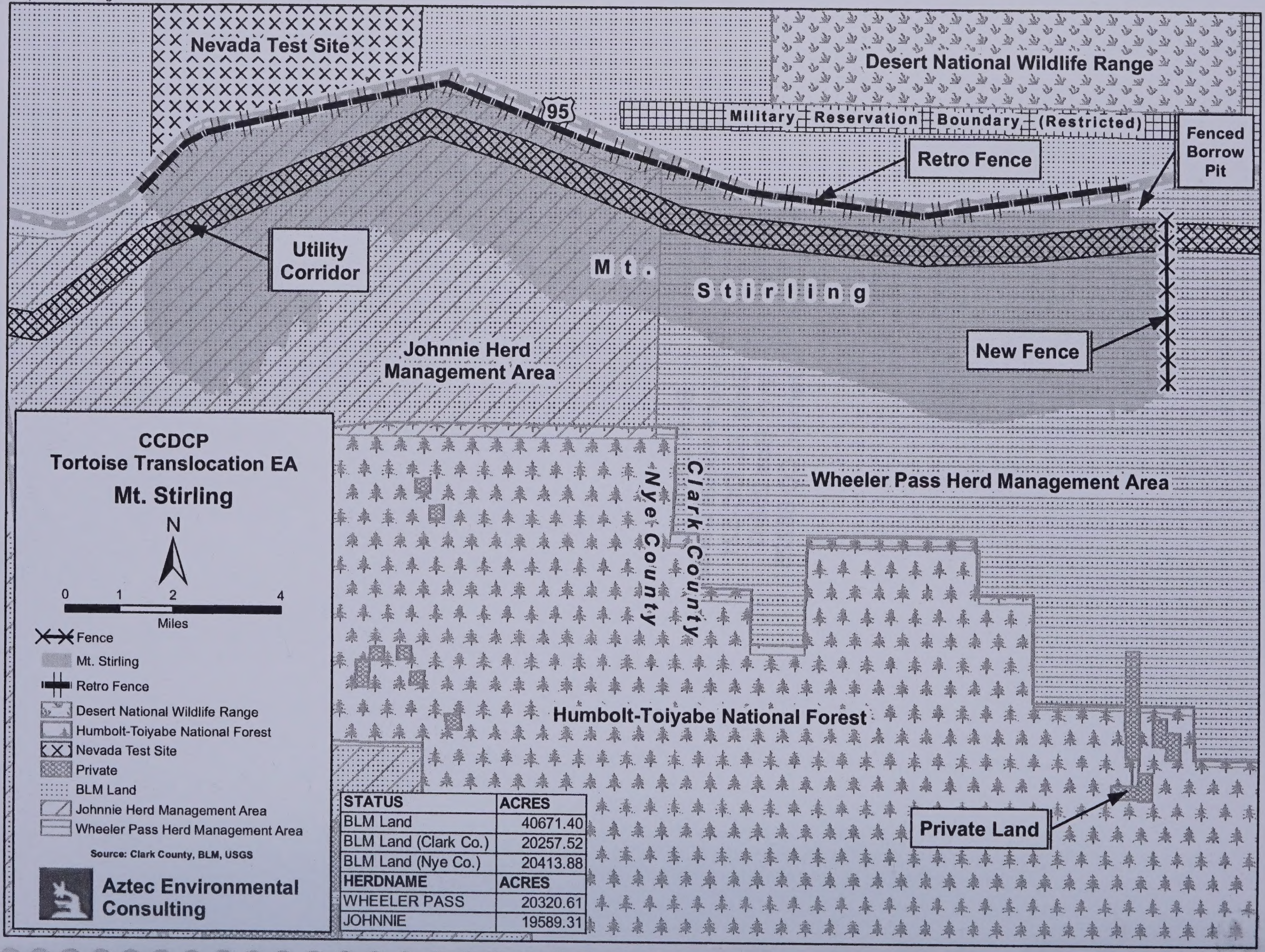
CCDCP
Tortoise Translocation EA
Desert National Wildlife Refuge
N
0
1
2
4
Miles
New Fence
DNWR Translocation Site
Utility Corridor
BLM Land
Private
Indian Reservation
Nevada Test and Training Range
Nellis Air Force Base
Desert National Wildlife Refuge
Recommended Wilderness Area
Las Vegas Valley Disposal Area
Source: Clark County, BLM, USGS
Aztec Environmental Consulting
Nevada Test and Training Range
Desert National Wildlife Refuge
Corn Creek Springs
Desert National Wildlife Refuge Translocation Site
New Fence
95
Utility Corridor
Las Vegas Paiute Indian Reservation
Private Land
157
Las Vegas Valley Disposal Area Boundary
Nellis AFB

MAP 5 BCCE


Proposed Boulder City Bypass
95
95
Black Canyon Wilderness Area
Colorado River
Critical Tortoise Habitat
Lake Mead National Recreation Area
BCCE
Utility Corridor
Nelson Highway
New Fence
Private Land
El Dorado Wilderness Area
Nevada
Arizona
CCDCP
Tortoise Translocation EA
BCCE
N
0
1
2
4
Miles
New Fence
BCCE
BCCE Translocation Site
Critical Tortoise Habitat
Utiltiy Corridor
Private
BLM Land
Lake Mead National Rec. Area
El Dorado Wilderness Area
Source: Clark County, BLM, USGS
Aztec Environmental Consulting

STATUS	ACRES
BCCE	38360.75
BLM Land	7859.34
El Dorado Wildemess Area	4598.63
Private	30.87

Map 6 Mt. Stirling


Nevada Test Site
Desert National Wildlife Range
95
Military Reservation Boundary (Restricted)
Retro Fence
Fenced Borrow Pit
Utility Corridor
Mt. Stirling
New Fence
Johnnie Herd Management Area
Wheeler Pass Herd Management Area
Nye County
Clark County
Humbolt-Toiyabe National Forest
Private Land
CCDCP
Tortoise Translocation EA
Mt. Stirling
N
0
1
2
4
Miles
Fence
Mt. Stirling
Retro Fence
Desert National Wildlife Range
Humbolt-Toiyabe National Forest
Nevada Test Site
Private
BLM Land
Johnnie Herd Management Area
Wheeler Pass Herd Management Area
Source: Clark County, BLM, USGS
Aztec Environmental Consulting

STATUS	ACRES
BLM Land	40671.40
BLM Land (Clark Co.)	20257.52
BLM Land (Nye Co.)	20413.88
HERDNAME	**ACRES**
WHEELER PASS	20320.61
JOHNNIE	19589.31

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